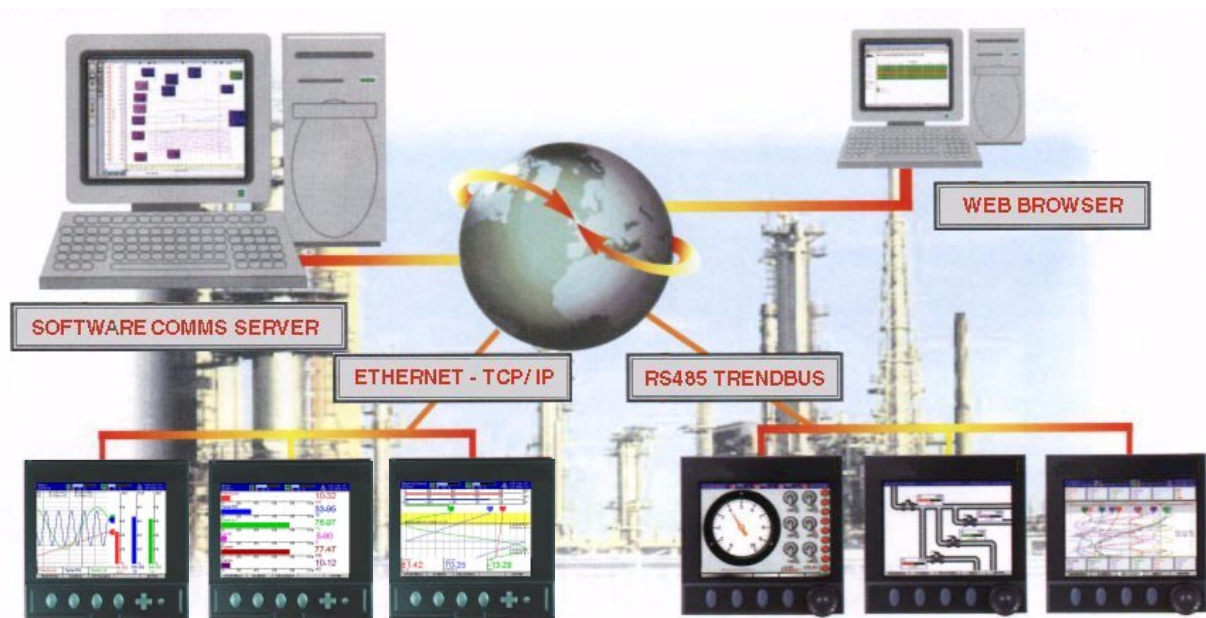


TrendManager Pro V5

Software Suite

User Manual



eZtrend V5
Minitrend V5
Multitrend Plus V5

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TrendManager Pro V5 Suite License Agreement

This License Agreement is your proof of license. Please treat it as valuable property.

This is a legal agreement between you (either an individual or entity), the end user, and **Honeywell**. If you do not agree to the terms of this Agreement, promptly return the disk package and the accompanying items (including written materials and binders or other containers) to the place you obtained them for a full refund.

Grant of License

Honeywell grants to you the right to use the software programme identified above on an individual computer.

For the purposes of this Agreement, 'use' means loading the software into RAM as well as installation on a hard disk or other storage. You may access the software from a hard disk, over a network, or any other method you choose, so long as you comply with this Agreement.

Software

a) Software, if listed on the face hereof, is hereby licensed and not sold. The licence is non-exclusive, and is limited to such equipment and/ or location(s) as are specified on the purchase order for which this instrument serves as either a quotation or acknowledgment. No other use is permitted.

b) **Honeywell** retains for itself (or, if applicable, its suppliers) all title and ownership to any software delivered hereunder, all of which contains confidential and proprietary information and which ownership includes without limitations all rights in patents, copyrights, trademarks and trade secrets. Buyer shall not attempt any sale, transfer, sublicense, reverse compilation or disassembly or redistribution of the software. Nor shall Buyer copy, disclose or display any such software, or otherwise make it available to others (except as **Honeywell** authorizes in writing).

Year 2000 Compliance Statement

The *TrendManager Pro V5 Suite* is Year 2000 compliant in accordance with the BSI DISC PD2000-1 definition, provided that the host PC, its BIOS, operating system and any other active applications are also Year 2000 compliant.

Chapter 1: Welcome to TrendManager Pro V5 Suite

Features

* not featured on the *eZtrend V5*

Features	TrendViewer	TrendManager	TrendServer
Full Configuration of <i>Minitrend V5, Multitrend Plus V5 or eZtrend V5</i> recorders on a PC		✓	✓
Simulate <i>Minitrend V5, Multitrend Plus V5 or eZtrend V5</i> recorders on PC		✓	✓
Import data from disk	✓	✓	✓
Print all graph data and recorder configurations	✓	✓	✓
Archive data on integral secure database		✓	✓
E-mail recorder configurations and data on www		✓	✓
Export using CSV format files		✓	✓
Export using OPC links			✓
Up to 256 units on RS485 *			✓
On Ethernet using TCP/IP			✓
Distribute all recorder data over LAN plant-wide			✓
FTP/IP Ethernet connection			✓
Events system		✓	✓
Operates in Windows™ 98 SE, ME, 2000 and NT4#, XP	✓	✓	✓#
Password protection - Full user traceability	✓	✓	✓
Web browse a recorder			✓
Send setup to recorder via Ethernet			✓
Audit trail manager			✓
Realtime data retrieval used for graphing & logging			✓
Replay of historical and Realtime data using a split screen format.			✓
New protocols, Modbus RS485 (Modbus X) and Profibus *			✓
Comms Server manages the communication status of the recorder			✓
Local and Remote Server and Database access via an Ethernet link			✓

TrendServer only runs on Windows™ 98SE, 2000 and NT ver 4.0 with service pack 3 onwards (5.0 recommended) and XP.

Chapter 2: Introduction to the TrendManager Pro V5 Suite

Introduction



The *TrendManager Pro V5 Suite* software is a Windows™ based PC package which accompanies the **Honeywell** range of recorders as a data acquisition and configuration tool. The mouse and keyboard operations are Windows™ orientated and this manual is written under the assumption that the user is familiar with Windows™.

TrendManager Pro V5 Suite is designed and written for Windows™ 95 (except for *TrendServer*), 98SE, ME, 2000, Windows™ NT version 4.0 with service pack 3 (onwards) and XP. **NB:** *TrendManager Pro V5 Suite* will not run with Windows™ 3.1.

Any technical terms peculiar to the **Honeywell** range of recorders should be referred to in the [“Glossary” on page 69](#).

Software Options



TrendManager Pro V5 Suite software is available listed below. The attributes of each level are listed in [“Features” on page 1](#).

TrendViewer

This software is available free of charge and allows the user to view, graph, print data from a disc or PCMCIA memory card interface and export data facility.

TrendManager A stand alone package which allows the user to fully configure recorders, as well as archive, graph, print and export data. An integral E-mail facility allows recorder data and configurations to be sent to other users and colleagues on the plant or world-wide. Total recorder control and simulation within an integrated secure data base.

TrendServer A fully network aware package which allows data viewing, archiving and communication with unlimited recorders. Data archive tools are included as standard as well as the ability to E-mail, graph, print and export data.

The *TrendServer* software has an integral Communications Server that manages the communications status of recorders on a serial port (RS485) or through an Ethernet connection. Unless an RS485 card is used, then an RS485 to RS232 converter is required (**Westermo**). Recorders are held on databases and the databases are held on servers. By accessing other comms servers remotely it is possible to receive data from other recorders held on databases on other servers - known as remote servers. The comms server uses IP Addresses to locate recorders on local and remote servers. All logging configuration for comms logging and logging to a database is set up from the Comms Server.

Recorder data can be entered into any PC on the LAN (Local Area Networks) and automatically viewed and graphed at any other PC. *TrendServer* offers the ability to download and import data from Ethernet connected remote recorders. To use it you

must have a **Honeywell V5** recorder with an Ethernet card and the FTP option installed. Many communication protocols are now available including: RS485 Trendbus (including web browser), Ethernet (using FTP), RS232 (web browser). Plus RS485 Modbus and Profibus options on the recorder. For a standard barcode reader that provides an ASCII output use the standard Ethernet/RS232/RS485 comms card.

* Only Ethernet communications available on the *eZtrend V5*.

All software in the *TrendManager Pro V5 Suite* has a comprehensive on-line help system with context-sensitive help built in. Just hit the F1 key to call up the specific help file relevant to where you are in the software application.

Chapter 3: Installation

Installation

Before installing the software on to your PC, it is recommended to close down all other applications, including any programs that automatically load during the start up procedure.

Load the CD into the drive and wait for the autorun sequence to start. If autorun does not commence, follow these instructions:

- go to 'My Computer'
- select CD ROM drive
- select Start.exe
- Follow the instructions on the screen

During installation you will be asked to confirm the drive and directory into which you would like the software installed. The default drive is C:\ and the directory is *TrendManager Pro V5 Suite*. License details will also be required, unless installing *TrendViewer* in which case no password is required. Enter the information supplied with the software to gain access.

NB: This is an alpha/numeric code and must be entered exactly in upper case. Codes from other **Honeywell** software will not work, each code is unique to the software supplied.

The *TrendManager Pro V5 Suite* may re-start your computer during installation depending on whether DCOM/WINSOCK TSP has been installed. For Windows™ 95 users the *TrendManager Pro V5 Suite* may run a Windows upgrade on some files, again depending on whether DCOM/WINSOCK TSP is installed. The upgrade is standard Microsoft update pack for Windows™ common controls.

TrendManager Pro V5 Suite installation for Windows NT based systems, may be installed by users who are privileged with Power Users and/or Administrators accounts. The installation no longer warns the user to be an Administrator, if the user has insufficient privileges (e.g. User is a Guest or a Backup Operator) then the Installer will warn the user. [See "Passwords" on page 47.](#)

Start up

The *TrendManager Pro V5 Suite* has been installed on the Hard drive of your computer in 'program files' unless during set up you have changed the destination folder. Click on 'Start', go to Programs and select TrendView Recorders, then select either Trend Server Pro or TrendManager Pro according to which type of software option has been purchased.

The *TrendManager Pro V5 Suite* has a comprehensive on-line Help facility which includes detailed instructions on 'How to do things' and detailed explanation of all application areas. A section on using Help is also included in the *TrendManager Pro V5 Suite* Help Index.

System Requirements

TrendViewer and *TrendManager* require the following minimum specification:-



- 200 MHz Pentium processor
- 3.5" floppy disk drive
- LS120/Zip drive
- CD - ROM drive
- Monitor recommended screen resolution 800 x 600 minimum requirement, high colour.
- Windows™ 98, ME, 2000, NT ver. 4.0 with Service pack 3 (onwards) and XP.
- 32 Mbyte or more of RAM (64 Mbyte recommended)
- 10 Mbyte free hard disk space
- a mouse

For TrendServer the following minimum specifications apply:-



- 450 MHz Pentium processor
- 3.5" floppy disk drive
- LS120/Zip drive
- CD ROM
- Monitor recommended screen resolution 1024x768 minimum requirement, high colour.
- 2 Gbyte Hard-drive
- Windows™ 98SE, 2000, NT ver.4.0 with Service pack 3 onwards (5.0 recommended) and XP.
- 128Mbyte RAM
- TCP IP installed
- a mouse

TCP/IP = Transmission Control Protocol/Internet Protocol is the main transport protocol used on the Internet for connectivity and transmission of data across heterogeneous systems.

With all **Honeywell** software, performance improves with more RAM, faster CPUs, and faster and larger hard disk drives.

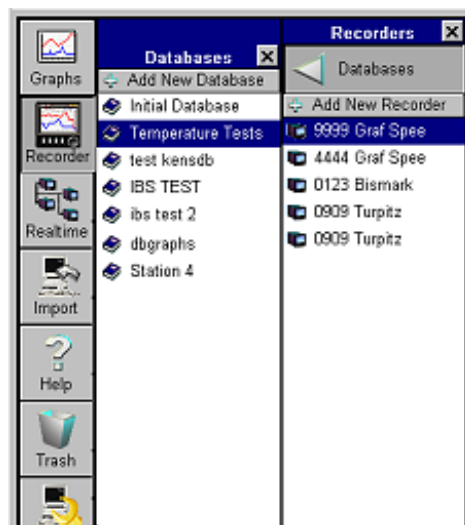
NB. It is recommended that at least 100 Mbyte of free hard disk space is available for archiving data. Please note the more logging and data being stored, the more free space on the hard disk is required. This is not required with *TrendViewer*.

Chapter 4: Operation

Operation

When the TMP software is first opened, most of the PC screen will be blank apart from a **Button bar** down the left side of the screen.

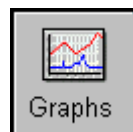
Button bar



The **Button bar** appears down the left hand side of the screen. From here recorders can be fully configured (not available on *TrendViewer*). This is the main control area for the recorder, graphs and databases. Clicking on either the **Graphs** button or the **Recorder** button will reveal a slide out pane from which further selections can be made (not available on *TrendViewer*). Realtime (available on *TrendServer*) lists recorders available on the communications server. Both the **Import** and the **Help** button will produce message boxes.

The **System** and **Server** buttons, available on *TrendServer* only.

Graphs button



Activate this button to show the **Graphs Slide out Pane**. From here graphs can be added and stored. Click on **Add new Graph** and instructions will appear. Click on the **Folders** heading and a further slide out bar appears. This is a list of **Folders** in which the user can organise their graphs. Use this button to **Import** on *TrendViewer*.

Recorder button



The recorder button activates the **Recorders Slide out Pane** which is the main area of control for the recorder and databases. Click on **Add New Recorder** and a **Select new device** box will appear. Click on the **Database** heading and select **Add New Database**, a message box will appear for the new details to be entered. This will help the user organise their recorders.

Realtime Communications



Available with *TrendServer* only.

Left click on the **Realtime** icon from the tool bar down the left side of the main screen. This will produce the **Recorders pane** displaying the recorders that are available on the communications server. From here the user can also see which server the comms server is using, which pens are available on each recorder and the comms server status.

Import button



To **Import** data from an external storage device or import a setup only. This button will implement the **Import Settings Window** which allows the user to set up how the data will be imported in to the database. For *TrendViewer* use the **Graph** button to import.

For *TrendServer* only, the facility to Import data from other recorders using TCP/IP Ethernet connection is available see [“Importing via FTP” on page 43](#). Importing data or a setup from an external storage device, see [“Importing from Directory” on page 43](#)

Help button



The *TrendManager Pro V5 Suite* Help Index contains everything you need to know for configuring the recorder, including a **How to do things** section, **Parts of the program**, plus **Technical papers** and **Contact information**. This Help button will access the general help file. For recorder specific help, select the item on the screen under enquiry and press F1 on the keyboard. See [“Help Files - TrendManager Pro V5 Suite” on page 9](#).

Trash button



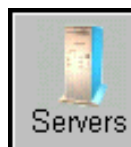
Drag items such as recorders, pens or graphs, over the **Trash** icon and let go to delete.

System button



The **System** button, only present on *TrendServer*, produces the **System Control pane** giving three options. First is the **Password**, click anywhere on the icon or the text. This will generate the **Password control** message box. Click on the **Status** icon or text to generate the **System Status** message box. Select the **E-mail** icon to produce the E-mail settings window.

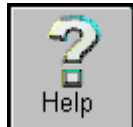
Server button



This is the central control area for the remote connections, only available with *TrendServer*. Click on this button to reveal the **Server Slide-out pane**. This is a list of servers available, click on **Add New Server** to generate the **Add New Database Server** message box. Click on **Database** to produce the **Server Database List**. This list displays the databases available on the current server.

Chapter 5: Help in the TrendManager Pro V5 Suite

Help Files - TrendManager Pro V5 Suite



Help in *TrendManager Pro V5 Suite* can be used in various ways. The help button takes you to the *TrendManager Pro V5 Suite* Help Index. This consists of:

- How to do things
- Parts of the programme
- Technical papers
- Contact information

Place the cursor over the desired heading, *TrendManager Pro V5 Suite* changes the appearance of the cursor to a finger pointing hand. Click on any of these headings in the help menu to activate the list.

Context sensitive help files

The method of entry through using the Help button will access the general help file. For specific help relating to a particular feature of the software application, click in the area on the screen and press F1 on the keyboard.

How to do things

This section is divided into two categories: '**General Things**' and '**Graphing Things**'. Select the desired help option by passing the cursor over the top, it will turn into a hand. Click on the required option to reveal detailed instruction on your chosen task. Follow the instructions shown and press X in the top right corner to close.

Parts of the program

Click on this to reveal the **Application Areas** split into the following categories. **Button Bar, Message Boxes, Graphing** and **General**. Place the cursor over the help topic desired and click to activate the instructions on that particular task.

Technical papers

This will access technical information relevant to your particular software.

Contact information

This screen gives information on how to contact us if you require further information on any of the **Honeywell V5** software or the **Honeywell V5** recorder.

Searching in Help

Within each help topic there are different ways to search for information. The top of each help screen shows the same menu bar throughout.



Find

This takes you to the 'Find set up Wizard', follow the on screen instructions. This will enable the user to find a particular word or scroll through the alphabetical topic screen. By clicking on the tags at the top of the Help Topic menu the user can view the Index or Contents file.

Help Topics

This takes the user to the Help Topics menu where Find, Index and Contents files can be accessed. Select option and press display.

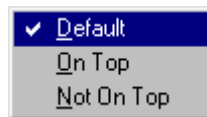
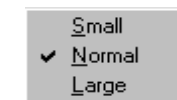
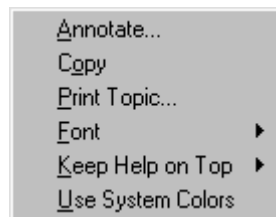
Back

This takes the user back to the previous screen.

Print

Direct access to printing any of the help screens.

Options



- Annotate allows the user to type any additional information associated with this topic.
- Copy allows the user to copy the screen.
- Print topic gives direct access to print the screen.
- Font size can be changed.
- Help can be set on top or not on top.
- Use system colours will require help to be re-started.

The final two options at the top of the help menu are shown as arrow direction buttons, these will take you either to the previous page or the next page.



Chapter 6: Recorder Configuration

TrendManager Pro V5 Suite allows you to set up a recorder from the comfort of your PC. To start recorder configuration first select the **Recorder** button on the button bar down the left side of the screen.

NB. If any function is denied by a flashing padlock, this is because a password is required to be entered to proceed any further, see [“Passwords” on page 47](#).

All the areas below are covered in the *TrendManager Pro V5 Suite Help*. Click in any area on the screen and press F1 on the keyboard to display the related help files.

Start here

Using the recorder icon from the button bar down the left side, select **Add New Recorder** and follow the on screen instructions to confirm the new device being loaded. In the **Hardware Configuration Wizard**, enter the recorder details including the ID number. The ID number of the unit must be set by the user. It is important that all of the user's recorders have different ID numbers especially if **Comms** is being used.

Hardware Configuration Wizard for the Minitrend V5

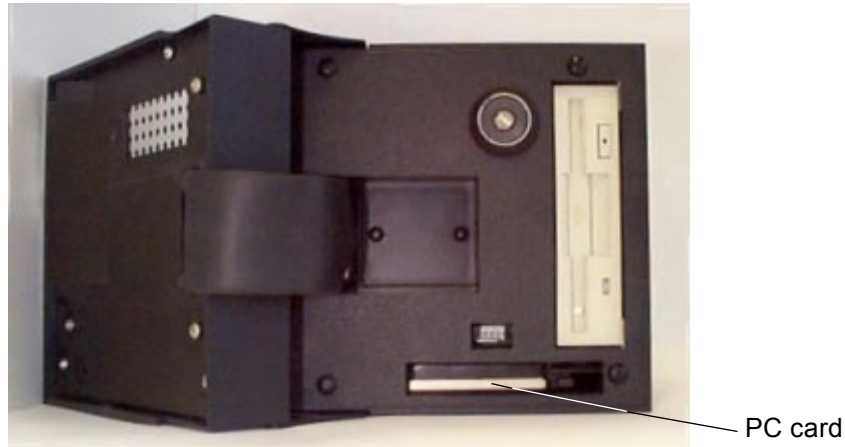


Slots A and B are for standard analogue inputs, including the Fast scanning option and/or 4-20 mA re-transmission cards. For positions of standard analogue cards, see [Table 1 on page 13](#). Slot C is for the communications card option RS485 Trendbus, RS232 and Ethernet or RS485 Modbus/Profibus. This card locates in the third slot looking at the rear panel. If there is no card fitted there will be a blanking plate fitted over the slot. Slot D is for the alarm card. Remember to set the number of channels with each slot. Additional maths pens can be purchased. Confirm if your recorder has a PC-Card fitted (PC-MCIA), see [“PCMCIA Interface Card” on page 12](#).

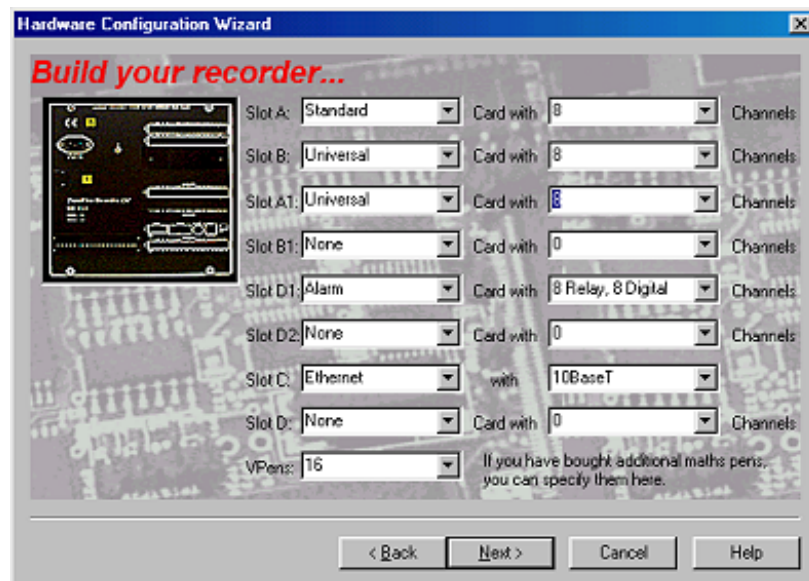
PCMCIA Interface Card (Minitrend V5)

This is a memory card interface, or hard drive, purchased as an option. It can be any size from an 8 MByte flash card to a 1 GByte hard drive.

This picture shows the *Minitrend V5* with a PC card fitted in the bottom slot below the disk drive. If there is no card fitted there will be a blanking plate fitted over the slot.



Hardware Configuration Wizard for the Multitrend Plus V5



Slots A, B, A1 & B1 are for standard analogue inputs, including the Fast scanning option and/or 4-20 mA re-transmission cards. For positions of standard analogue cards, see [Table 1 on page 13](#).

Slot C is for the communications card, either the Ethernet/Trendbus RS485/RS232 or the Modbus RS485 and Profibus card. Slot D is for the alarm card and D2 is for an extra alarm card. Remember to set the number of channels with each slot. Additional maths pens can be purchased. Confirm if your recorder has a PC-Card fitted (PCMCIA), see [“PCMCIA Interface Card” on page 13](#).

All these areas are covered in the *TrendManager Pro V5 Suite Help*. Click on any area on the screen and press F1 on the keyboard to display the related help files.

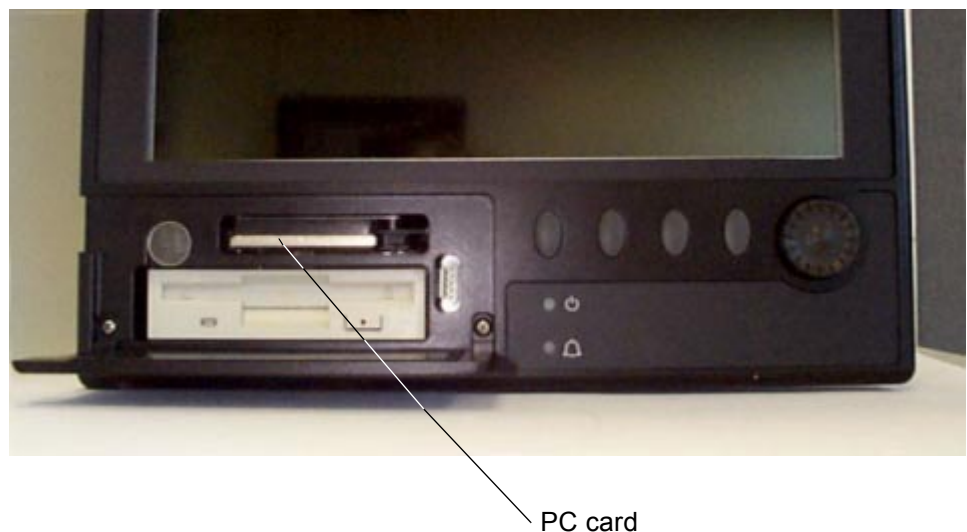
Table 1:

Multitrend Plus V5 Analogue card positions				
Card position	1 card	2 cards	3 cards	4 cards
A	✓	✓	✓	✓
B		✓	✓	✓
A1			✓	✓
B1				✓

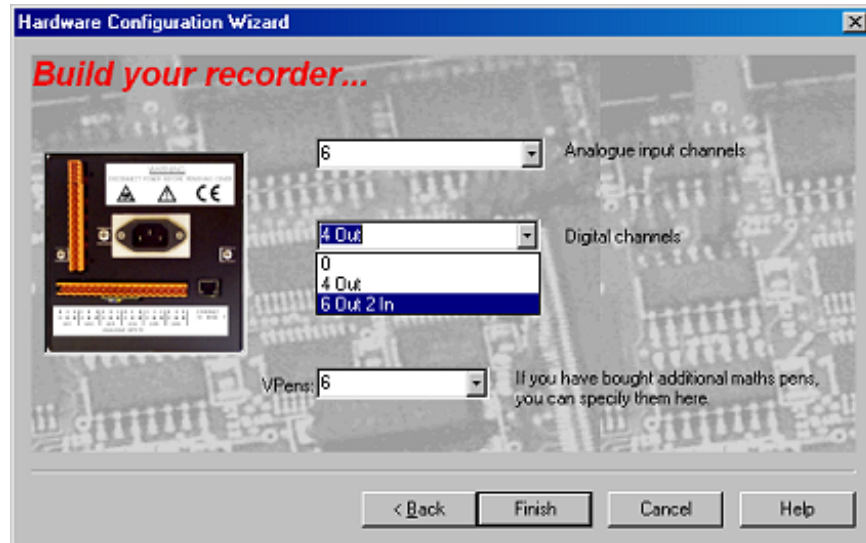
PCMCIA Interface Card (Multitrend Plus V5)

This is a memory card interface, or hard drive interface, purchased as an option. It can be any size from an 8 MByte flash card to a 1 GByte hard drive.

This view shows the *Multitrend Plus V5* with the disk drive flap down revealing the disk drive and the PC card slot above it. If there is **no** PC card a blanking plate will cover the slot.



Hardware Configuration Wizard for the eZtrend V5



The *eZtrend* configuration only requires the number of analogue channels to be set, either 2, 4 or 6 universal inputs. The Digital channels box is available if the recorder has an alarm card fitted. The two alarm card options available are 4 relay output or 6 relay output with 2 digital inputs. Select the correct set up for the recorder and click on the Finish button.

Setup window

General recorder setup



Go through each tab entering or editing the recorder details. Click in any area on the screen and press F1 on the keyboard to display the related help files.

General Setup tab

Check recorder details are correct.

Pen Summary tab

The **Pen Summary** tab shows the setup of each pen.

- **Enable:** Tick to enable.
- **Destination:** Data to be logged to Disk or PC card.
- **Mode:** Normal or Alarm logging.
- **Log Type:** Normal, continuous or fuzzy.
- **Rate:** Specify the logging rate in days, hours, minutes, seconds or milliseconds.
- **Method:** Choose sample or min/max logging.
- **Units:** Units of measure for that pen.
- **% Use:** Percentage of disk space used, logging to disk or PC card.

This window displays the **Disk Life Calculator** which shows how much space is left based on the logging rate of the pen. Readings are displayed in years, days, hours, minutes and seconds. This screen will update as pen details are completed. See next button **'Pens'**.

Communications tab

If the recorder has a comms card fitted, check it has been setup correctly in the Hardware Configuration Wizard.

Only the Ethernet option is available on the *eZtrend V5*.

Serial port RS232

Not available on the *eZtrend V5*.

For RS232 Configuration, select either **Front** or **Rear RS232 Port** connections. Choose the type of **Protocol** required to transmit the data between computers or peripherals, either ASCII or None. See ["Glossary" on page 69](#).

Select the **Baud Rate**, which is the speed at which the data will be transferred, default is 1200bits/sec. Enter how many **Data bits** per character, 5, 6, 7, or 8. Set the **Parity** to None, Odd or Even. The **Stop bit** signifies the end of the character, enter 1 or 2. See ["Glossary" on page 69](#).

Serial port RS485

Not available on the *eZtrend V5*.

Select the RS485 port and what type of **Protocol**, either Trendbus or None. The Baud rate is the speed at which the data is transferred, default is 38400bits/sec.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Ethernet Port

The **Ethernet** settings on this tab are only available if the unit has been configured for an Ethernet card, see [“Recorder Configuration” on page 11](#). Enter the Ethernet information on the lower area of the comms tab. Refer to [“Appendix D - Ethernet & E-mail” on page 87](#) for more information.

Serial port setup for
RS232(front)
RS232(rear)
RS485

Ethernet port
setup

IP Address - This is to distinguish between the various devices connected to the internet when communicating using **TCP/IP**. The address is a 32 bit value normally displayed with four numbers separated by a full stop or period e.g. 195.26.34.186. See your IT systems administrator for setting up IP addresses.

Subnet Mask - This acts like a filter when identifying an IP address. Specify the Mask that is used to determine the network address from the IP address, default is 255.255.255.0. Set this value according to the system or network to which the recorder or PC belongs.

Default Gateway - The **Default Gateway** is a configuration parameter transmitted to each network device. Set the value according to the system or network to which the recorder or PC belongs.

Mail Server- The **Mail Server** can only be selected if the E-mail option is available on the recorder. Enter the IP Address of the device to which the mail is to be sent, see [“Event E-mail setup” on page 30](#) and [“E-Mail” on page 46](#).

IP Resolution - Uses different types of protocol to translate the IP Address, default is **FIXED**.

Realtime - The drop down menu lists the protocol options for the retrieval of data via the Ethernet connection. Choose either None, Trendbus, Modbus TCP/IP, Modbus X. Modbus X differs from the standard Modbus only by the 4 byte floating point order being reversed for application compatibility.

Sockets - These numbers should not need to be changed, only by advanced users for networking.

All these areas are covered in the **TrendManager Pro V5 Suite Help**. Click on any area on the screen and press F1 on the keyboard to access recorder specific help files. Also see [“Glossary” on page 69](#).



Pen related setups

Select each pen from the list and allocate information about that pen by going through the tabs at the top of the screen.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

General

In the **General** tab select and enable each pen required, allocate a name or tag and a description. There is an option to set the pen trace thickness and a comprehensive colour palette to modify the pen trace colours on the graph. The pen trace colours are identical to those in the recorder.

Scales

Enter information about the scale by filling in the unit of measurement from the **Unit Text** drop down menu, or use manual text entry. Set the **Zero** and **Span** details for the bottom and top scale limits which can be up to 7 digits in length. The scale displayed in this window will incorporate zero, span and division changes according to information entered. **Divisions** within the scale can have increments automatically entered or the **Major** and **Minor** divisions can be set manually. **Scale factor** is the scale value multiplier which allows very large values to be displayed. Use the **Format** button to specify automatic scale label formats and to define the number of decimal places, default is 2.

Logging

When enabled, logging mode is set to normal and data can be logged to disk or to the PC card, (if fitted). **Logging type** can be set to none, continuous or fuzzy. For more details see ["Fuzzy Logging" on page 17](#).

The **Logging rate** is to be set using the drop down menu. Specific intervals can be fixed using the **Concise** option. There are three **Logging methods** to choose from **Sample**, **Average** or **MaxMin**. **Sample** will log the actual value of the last sampled reading, **Average** will take an average of all the samples taken since the last log, and **MaxMin** will log the Maximum and Minimum values since the last log.

Fuzzy Logging

Fuzzy Logging has been developed as a secure data storage technique which has self teaching data storage algorithm so the recorder stores data at a variable rate to match the process being monitored.

For more information see ["Appendix B - Fuzzy Logging" on page 81](#).

When **Fuzzy Logging** is selected the set up screen will change. A base rate is required, this is the rate at which the Input signal is checked. Specific intervals for logging can be fixed using the concise button.

To keep logging to a minimum, optimise disk space and to have more accurate waveforms, tick the **Autofit** box.

Advanced Users Only

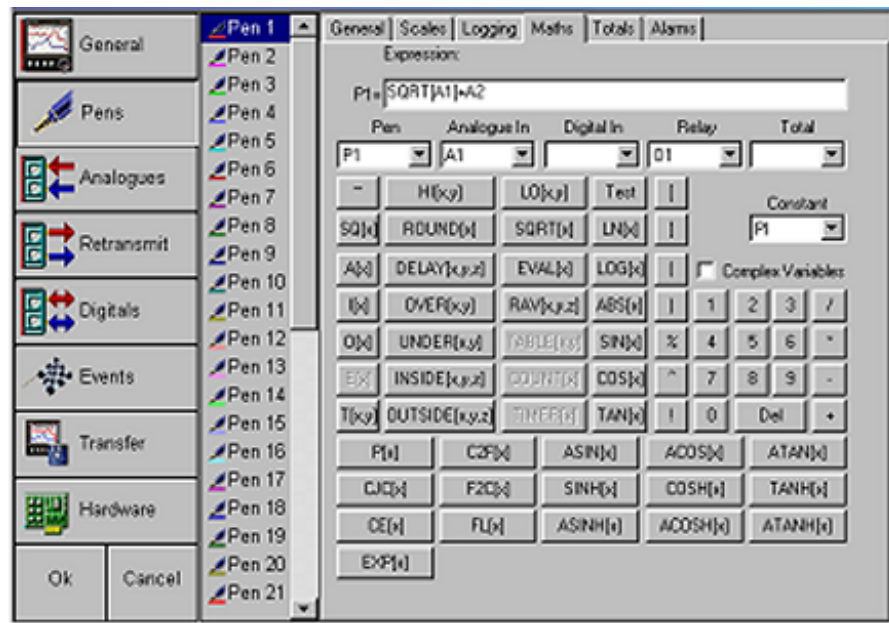
Fine tuning - Band A. Set up a percentage by which the input signal must change to trigger a log.

Band B is a more specific band within Band A, to give a more accurate trace.

Maths

If the maths pen option has been purchased the recorder can be configured to carry out simple or complex calculations. Configuring the maths block is easier than it looks. Type the formula you require as you would write it. The formula(s) can include analogue inputs, digital inputs and relay outputs.

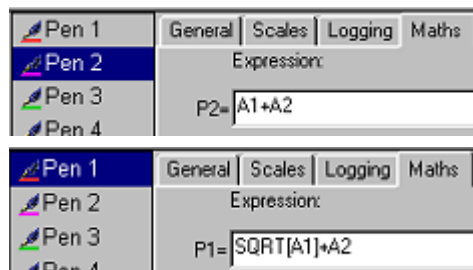
Up to 16 extra maths pens are available for the *Minitrend V5* and up to 32 pens for the *Multitrend Plus V5*, and 6 extra pens for the *eZtrend V5*. Additional alarms (up to 64) can be added by using the Maths expression to use a pen to graph the alarm status, see "[Appendix A - Maths Expressions](#)" on page 73. Only limited maths functions are available on the *eZtrend V5*..



example shown is for a *Minitrend V5* configuration

Maths (examples)

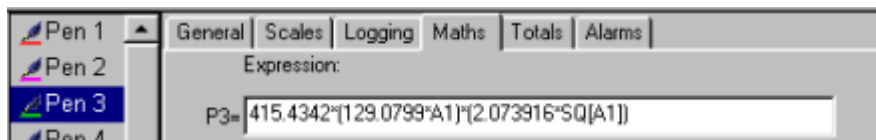
Here are some maths expression examples:



The first example is simple, with Pen 2 selected it will show the sum of analogue input 1(A1) plus analogue input 2 (A2).

The second example shows Pen 1 selected, this will show the square root of analogue input A1 then added to analogue input A2.

Here Pen 3 is selected showing a Quadratic Fit for a Type B Thermocouple.



For use of maths with the fail safe option, see [“Boolean Expressions” on page 78](#).

Totals

A **Totaliser** is normally associated with flow monitoring applications, where the input to the recorder would be a measure of flow rate (e.g. in litres per minute). The **Totaliser** can then measure the total amount that has flowed over a certain period of time. **Totalisers** are assigned to individual pens. Tick to enable, enter the pen units and the totaliser units. The Factor will convert the units you measure in to the units you want to totalise in. Use the **Totalize Helper** to assist in setting up these measurements, and working out the totalising factor.

Additional Controls

- **Ignore back flow:** When enabled any negative values are ignored and the total value will be held and never decrease.
- **Restrict range:** Activates min/max ranges.
- **Standard form:** Displays totalised values in standard form e.g. 2.76823e+09 regardless of length of the number.
- **Carry on roll over:** Only active when the Restrict range option is ticked and min/max ranges are set. This function allows any amount that goes over the maximum scale range to be added to the minimum scale range set. When this is not active, the reading will return to the minimum scale range set.

Alarms

The unit must have an alarm card, or a digital Input/Output card fitted.

The **Pen Alarms Setup** window is where the alarm levels for each pen are configured. Alarms can be set to trigger from a digital input or pen states. Alarms can be set to trigger events such as log events, set relays, change log rate or flush data etc.

The first box marked Alarm has a drop down box containing currently available alarms for that pen. If no alarms have been configured the box will show none. To configure the alarms, click on New button. The recording system allows the user to configure up to 64 alarms, with as few or as many on each pen.

If there are no alarms showing, check the alarms have been configured in the Hardware wizard.

When an alarm is allocated to a pen it is given the next available number.

e.g. If Pen 1 has 2 alarms 1 and 2, then if an alarm is set up for Pen 2 the next available alarm number would be 3. If the user then went back to add another alarm to Pen 1 this would be alarm 4 and so on.

Alarms allocated to a pen can be graphed using Maths. [“Maths” on page 18](#) and [“Appendix A - Maths Expressions” on page 73](#).

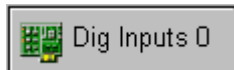
Alarm Controls

To add an alarm select **New**, this will automatically be assigned a name. The **Delete** alarm button removes the currently selected alarm from the list.

Enabling Controls

Enable as **Always** makes the alarm always active, continually checking and ready to be triggered.

The **By Digitals** option is only available if the recorder has an alarm card fitted which has the digital input/output function. It is necessary to setup the digital I/O card before this option shows as available. To configure the digital I/O, click on the Hardware Button to add a alarm card with digital I/O capability (if fitted in the unit as an option). See [“Digital input/output port setup” on page 23](#).



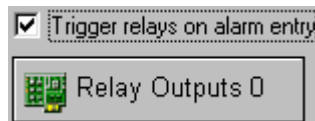
By Digitals enables the alarm if one of the digitals has entered its specified state determined by the Digital Inputs button. This button activates a list where by the available digital inputs can be added or removed to the list of triggered alarms.

The **Disable** digital is its default state and if selected, the alarm will appear in the recorders alarm list but will not be active.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

General alarm settings

Select the **Type** of alarm, either **High** or **Low** so if the level goes above the stated value, on a high alarm, or below the stated value, on a low alarm, the alarm will be triggered. **Log mode** is set to **Normal**. Set the alarm **Level** by entering the numeric value at which the alarm is to be activated, the level is in terms of pen units so must not exceed the current pen scale. If the alarm is required to be logged to disk then tick **Log as Event**. Tick **Mark on chart** if a marker is required to be placed on the chart when an alarm is triggered.



Choose whether to **Trigger relays on alarm entry**, tick this to produce the Relay Outputs button. Select relays from the **Relay Output** list and add to Trigger Output list using the **Add** and **Remove** buttons.

Advanced options

Hysteresis gives the alarm a tolerance level. It allows a specified percentage value of the full scale to be added on to the alarm level. The **Symmetrical** option divides the hysteresis value equally on either side of the alarm. If the Hysteresis value was 10%, and the symmetrical option is enabled, then the logged reading would trigger at 5% (of the full scale value) below the alarm level. For the alarm condition to end, the alarm would have to rise to over 5% (of the full scale value) above the alarm level.

Damping

With this enabled, an alarm level must be breached for a specific period of time before an alarm is triggered. Enable this function and enter a time limit here, in hours, minutes and seconds with a maximum time of 12 hours.



Aspects of Analogue input.

Click in any area on the screen and press F1 on the keyboard to access recorder specific help files.

Analogue General tab

Choose the **Analogue** button and then select an analogue from the menu e.g. Ana 1. Ensure it is enabled then use the **Analogue General** tab to assign a **Label** to identify this input.

Also under the **Analogue General** tab is a **Damping** setup which, by default, is set to disabled. This will average the incoming signal over a specific period of time from 1 to 15 seconds thus creating a damping effect.

Enter the **Time factor** or width of the pulse, to be rejected, this can be set from 1 to 15 seconds.

Set the **Transient Filter** to ignore a specified type of pulse. This is used to filter out any electrical interference from external influences.

The **Threshold level (%)** or depth of the pulse is entered as a percentage of the span. The span is defined by the Engineering span e.g. Eng Zero = -10, Eng Span = +10. Enter pulse depth as a percentage of span = 20. If the signal is within 20% of span the point will be logged, if the signal is outside the 20% of span the signal will be logged as the previous point.

Square Root Extraction, tick this box if you require a non linear signal to be converted into a linear scale.

Analogue Scales tab

Use this section to enter set up information for the analogue scales. Select the **Analogue Input Type** of signal coming into this port, Current, Volts or Thermocouple, Resistance Thermometer (if fitted).

The **Tie to** box, check to enable, select a pen whose units are then connected to the engineering units. This will lock the engineering units to the pen scale.

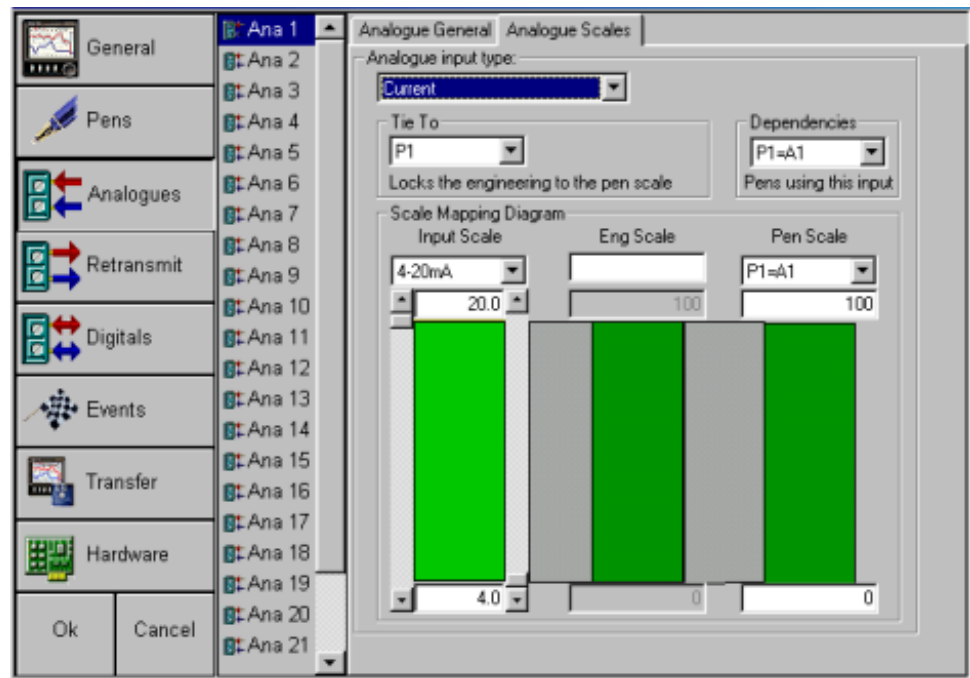
Dependencies lists all pens which refer to this input.

The **Scale Mapping Diagram**, shows three scales, the first is for current or voltage inputs.

Input Scale, select the input range and enter the top and bottom values of that input range.

Under **Eng Scale**, enter a label to identify the engineering units, then enter the top and bottom scale range.

The **Pen Scale** lists pens which only use this input, then enter the selected top and bottom pen range.



example shown is for a *Minitrend V5* configuration

If the type of analogue input is a **Thermocouple** use the **Range** drop down menu to select the type of Thermocouple and the unit of measurement. Tick the box if up scale burn out is required. The **Reference Junction** measures the temperature at a designated point.

Int auto - Uses the cold junction sensor in the recorder as a variable reference temperature.

Ext 0 °C - Assumes the cold junction is held at 0 °C to provide a 0 mV reference, external to the recorder.

Ext Spec - Uses a **Reference Junction** held at a constant temperature. Specify the temperature that the cold junction sensor is to be set at.

Ext Input - Use a thermocouple or resistance thermometer from another channel to measure as the cold junction sensor.

If the type on analogue input is a **Resistance Thermometer**, select this from the analogue input type drop down menu. This screen only requires the range and the unit of measure to be entered. A Resistance Thermometer measures the resistance of the device and produces a temperature

Refer to *Minitrend/Multitrend Plus V5* Application Note 1 for information on setting up and calibrating thermocouples. This can be found on the TMP CD supplied or by visiting our web page at www.honeywell.com/sensing.



Analogue output setup or Retransmission

Not available on the *eZtrend V5*. If a **Retransmission** card is fitted, the available analogue outputs will be displayed as a list.

Click on an output and tick to enable, select a pen from the drop down menu. Tick to enable over range if required, this allows 4 mA either side of 4-20 mA. If this option is not available but the unit has a re-transmission card fitted, check the details have been entered correctly in the Hardware wizard.

Click in any area on the screen and press F1 on the keyboard to display the related help files.



Digital input/output port setup

NB: Each Input/Output line is shared so it can only be an input or an output. Select each digital from the list e.g. Dig1, this will appear in the **Label** box. The label is to identify the condition of the input, for example **On State** could be labelled 'Pump On' and **Off State** could be labelled 'Pump Off'. Use the On/Off state to enable each digital.

Specify the **Direction** of the line, select either an **Digital Input** or a **Relay Output**.

There is a **Fail Safe** option which can be activated on the relay output direction, this holds the relay in an energised state until triggered by an alarm, when the relay is de-energised. Any power failure will cause the same result. When using fail safe with a maths expression refer to "[Maths and Fail Safe](#)" on page 79.

Choose the **Log to event window**, this will prompt a message to appear in the events list window when the digitals change state.

Check the **Place a mark on the chart** box to place a notification mark onto the chart when the digital changes state.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Events System

Events are certain conditions or operations which can be setup and logged according to the time and date of the occurrence, subsequently they can be reviewed in a list or represented on a graph. Click on the **Events** button from the side bar and select an event number from a list of up to 32 separate events. Tick Enabled to activate the screen. Each event can be named, for identification purposes.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

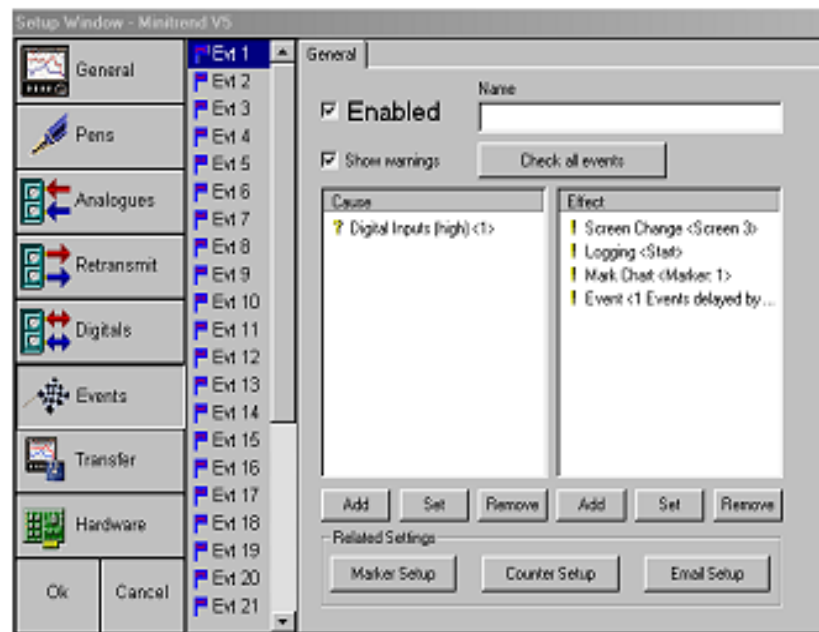
Setting up Events

Events can be set up so when a condition occurs during recording it produces an outcome, this is known as '**Cause**' and '**Effect**'. Select a **Cause** and the **Effect** by clicking on the **Add** box at the bottom of each Cause and Effect window to reveal a selection list.

Limited events are available on the *eZtrend V5*. For listings of Events 'Cause and Effects', see ["Appendix C - Events" on page 85](#).

For displaying Events on a graph, see ["Graphing Events" on page 63](#).

FIGURE 6.1



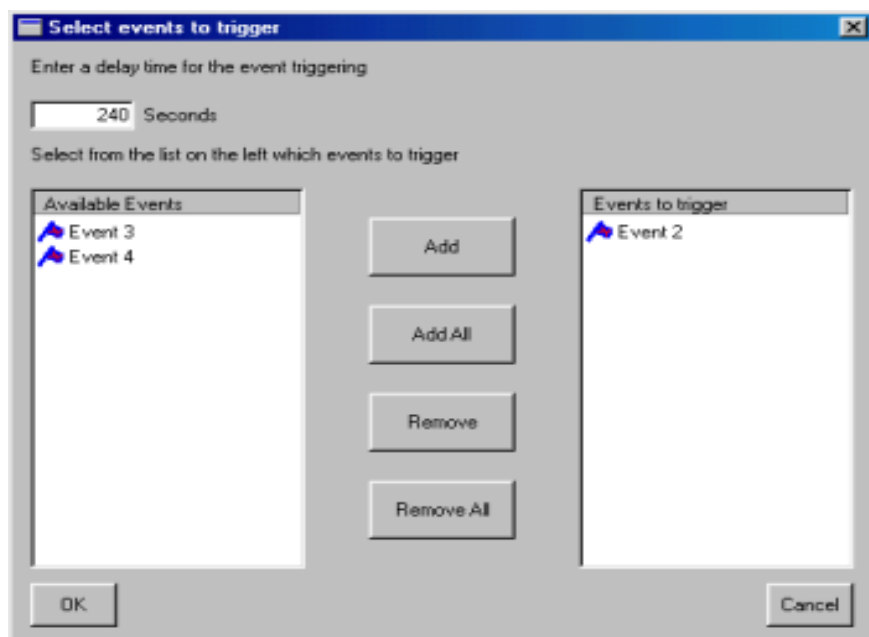
example shown is for a *Minitrend V5* configuration

As shown in [Figure 6.1](#), one single cause can be set up to have many effects. The event set up here shows that when the Digital Input goes high the effects will be:

- The recorder screen will change (Screen Change <Screen 3>).
- Logging will start (Logging <Start>).
- A Mark will be placed on the chart (Mark Chart <Marker 1>).
- Event 1 will be activated (Event<1 Events delayed by 60 seconds>).

When an Event is added to the effects list the '**Select events to trigger**' box will appear. In [Figure 6.2](#), Event 2 has been selected with a delay time of 240 seconds.

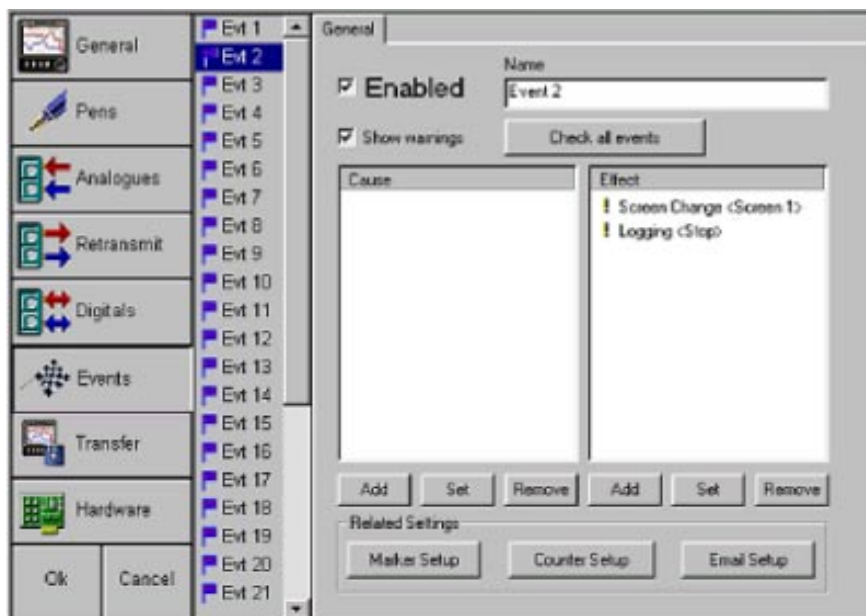
FIGURE 6.2



example shown is for a *Minitrend V5* configuration

Event 2 does not require a cause to be set as it will be forced to activate from being an Effect of Event 1. See [Figure 6.1 on page 24](#). Event 2 has been set up to change the screen back to Screen 1 and to Stop Logging after a time period of 240 seconds.

FIGURE 6.3

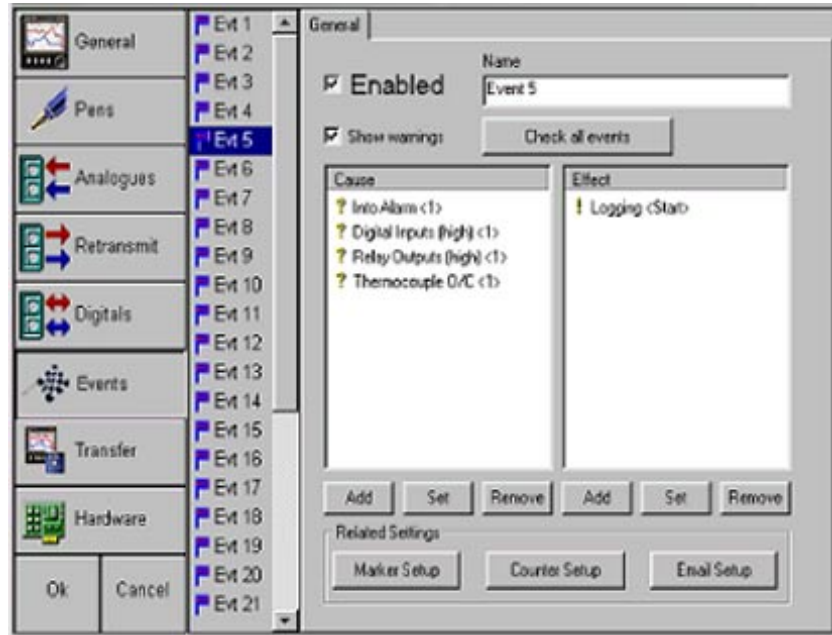


example shown is for a *Minitrend V5* configuration

NB. Use the '**Check all events**' box to verify the setup will work correctly. A warning message may appear to check the entries are correct.

Alternatively many '**Causes**' can be setup to have the same '**Effect**'. Up to 32 separate Events can be setup with up to 20 **Causes** or **Effects** in each Event, shown here in [Figure 6.4](#).

FIGURE 6.4



example shown is for a *Minitrend V5* configuration

For listings of Events 'Cause and Effects', see ["Appendix C - Events" on page 85](#).

For displaying Events on a graph, see ["Graphing Events" on page 63](#).

Event Marker Setup

Event Markers are messages posted onto the recorders screen, when an Event occurs. There are 20 event markers that can be customised, each marker can have up to 80 characters with embedded controls < !***!> allowing real-time recorder data to be inserted into the text.

Select the marker number from the **Message** box, type text into the **Marker text** box and add the embedded parameters tag using the drop down lists. Choose a tag from these options.

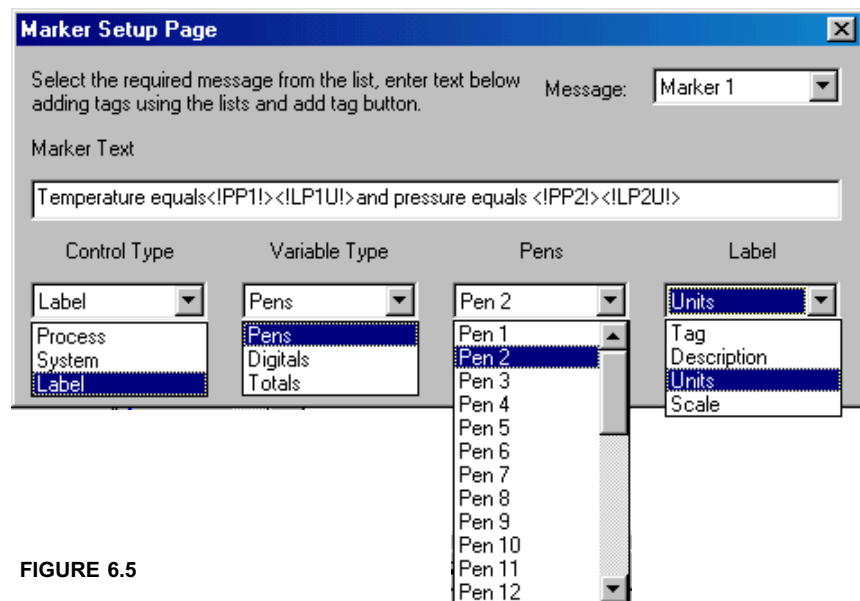


FIGURE 6.5

Figure 6.5 shows an example of Marker text, this is how it is broken down.

'Temperature equals <!PP1!><!LP1U!>and pressure equals <!PP2!><!LP2U!>'

'Temperature equals <!PP1!>' this tag is telling the system to process the information on Pen1 and add it to the marker.

'<!LP1U!>' means add the Pen 1 as a label to the marker plus the units in which it is measuring e.g. seconds, inches or °C.

The second part reads 'pressure equals <!PP2!>' this is telling the system to process the information for Pen 2 and add it to the marker.

'<!LP2U!>' means add Pen 2 as a label plus the units of measurement to the marker.

This will insert the values of Pen 1 with the Units for Pen 1 and the value of Pen 2 and the Units Pen 2 into the marker.

A tag must be placed within the text to ensure the recorder information, e.g. the Pen value, is inserted. When the marker text is finished click on the **Add Tag** button and click **Done** when all markers are complete.

For help on setting up markers use the ["Marker tables" on page 28](#).

Marker tables

Control Type	Variable Type	Pens	Label
Process	Pens	Pen number?	-
	Digital Inputs	Digital number	-
	Relays	Relay number	-
	Totals	-	-
	Counters*	Sub type	-
		Event*	Event number*
		Alarm*	Alarm number*
		Digital*	Digital number*
		User*	-

Control Type	Variable Name	Comms port
System	Disk usage	-
	PC card usage	-
	Memory usage	-
	ASCII Input	Front RS232*
		Rear RS485*
		Rear RS232*

Control Type	Variable Type		Label
Label	Pens	Pen number	Tag
			Description
			Units
			Scale
	Digital Inputs	Digital number	Tag
			State text
	Relays	Relay number	Tag
			State text
	Totals	-	-
	Counters*	Sub type	Label
		Event*	Event number*
		Alarm*	Alarm number*
		Digital*	Digital number*
		User*	-

Counters and sub-types marked * are not available on the *eZtrend V5*.

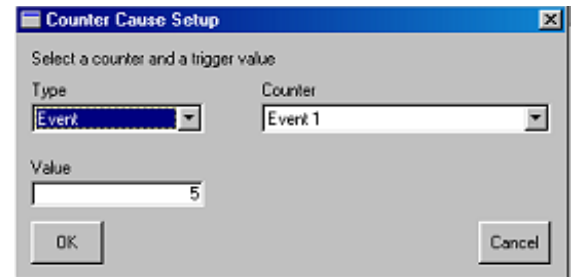
Event Counter Setup

The Event Counter option is not available on the *eZtrend V5*.

The **Counter** system can be used as a **Cause** or an **Effect**. The Counter Cause triggers an Effect when a Counter reaches a specified value. The Counters can be reset using the Event Effect.

Counters as a Cause

Under the Cause window click on Add, select **Counter**, as a 'Cause', to produce the **Counter Cause Setup** box. Enter the **Type** of counter from one of the four programmable counters; **Event**, **Alarm**, **Digital** or **User**. All except 'User' are continually running in the background and are already enabled. The **User** type of counter can be used to count any type of event(s), see "[Event Counter Setup](#)" on page 29.



Enter the type of counter, which event is to be counted and the value of the count.

Event Counter Setup

Counter setup is only required when a **User** type counter is selected in the **Counter Cause Setup** box, see "[Event Counter Setup](#)" on page 29. To activate, select the **Counter Setup** button at the bottom of the main events screen.

- Choose a counter number from 1 to 16 and click in the enabled box.
- Enter a tag or description to identify the counter.
- Indicate a Start point for the counter and a value in the Rollover box for the counter to reach and restart the count.

Click Done when complete. The Counter is now in place and can be used on any Event.

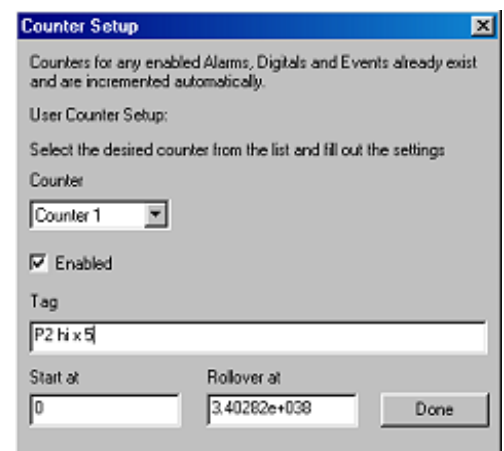


FIGURE 6.6

Example: [Figure 6.6](#).

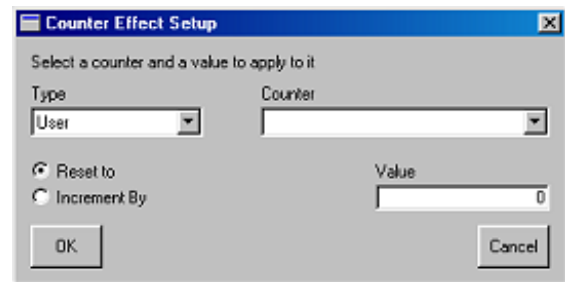
Configure Pen 2 to have a high alarm at 95%, set up Event 1 with a Counter as the cause. The counter value is set to 5 so when Pen 5 goes into alarm for the fifth time, an Effect is triggered. A tag can be added to appear on the recorder screen when the counter has reached its value and the event has been triggered.

Counter as an Effect

Resets or increments User, Alarm, Digital or Event Counters.

Select the type of Counter effect User, Alarm, Digital or Event. Select a counter from the drop down menu.

Only the User counter will enable the option to **Reset to** or **Increment By** and a value to be entered.



Using/Viewing Counter Values

The value of a Count can be used in Maths, Markers or E-mail messages. Display or log through the maths expression.

For details on using counters as part of a Maths expression see ["Appendix A - Maths Expressions" on page 73](#).

- CUn = Counter User (where n is the User counter number)
- CAn = Counter Alarms (where n is the Alarm number)
- CEn = Counter Events (where n is the Event number)
- CDn = Counter Digitals (where n is the Digital input number)

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Event E-mail setup

The **E-mail Event** is an effect triggered when a particular cause is executed. Set-up pre-set E-mail addresses and messages for use with the Events System. The **E-mail Setup** button is at the bottom of the main events screen. Up to 16 destination E-mail addresses can be entered, plus 1 Administrator addresses for when mail is unsuccessfully delivered. The administrator address also acts as a source of the e-mail.

- Enter the recipient's name and E-mail address (not forgetting an E-mail address for the Administrator).
- Select a message number and subject.
- Type the message information to be E-mailed in the Message text box.

Click on Done when complete. The message is now in place and can be used on any event where the E-mail option is selected as an effect.

General operation of the E-mail system.

The recorder sends messages for distribution by an **E-mail Server**. The E-mail server is located by its **IP Address** as set-up in the communications set-up options. When the recorder sends an E-mail message, it locates the E-mail server and uses SMTP (Simple Message Transfer Protocol) to send the message to the E-mail server. SMTP allows the recorder to send messages to an E-mail server without having its own E-mail address; because of this the E-mail server will not be able to send any reply back to the recorder.

When setting-up the E-mail address list, it is important to include the E-mail administrator address. The **Administrator E-mail Address** is the E-mail address to where the E-mail server will respond in the event of any problems with the delivery of E-mail messages. The Administrator will also appear to be the source of any E-mail messages sent by the recorder. Most E-mail systems require a 'Reply To' address as part of an E-mail message, since the recorder does not have its own E-mail address; it uses the E-mail administrator as the 'Reply To' address.

Any E-mail message will consist of a delivery list (recipients), a subject, and an optional message body. The message body may be omitted for very short messages, or where the message is to be sent to a paging system.

Setup auto e-mailing

The **E-mail Subject** may be either one of the existing **Event Markers**, or one of the two E-mail subjects. E-mail subjects can be preset into the E-mail system e.g. a Report required to log the same information as a regular event.

E-mails can be made up from:-

1. One of the two standard messages preset into the E-mail system.
2. Markers preset up in the Marker set-up system.
3. Text

Or combinations of 1, 2 and 3.

The **E-mail message body** may be either one of the existing event markers, or one of the two E-mail message blocks. **Event Markers** are restricted to 80 characters each. The two E-mail message blocks are restricted to just over 1000 characters each. Both the message subject and body may contain embedded marker tags as used in the event markers.

When the recorder sends an E-mail message that includes a message body, the recorder name, recorder number and the time/date will be appended to the end of the message body text. This is to allow easy identification of when the message was sent, and by which recorder.

Any E-mail message is sent as an effect within the recorder events system, so anything that can be configured to act as an event cause may be configured to send an e-mail message. Any E-mail message may be sent to up to sixteen of the recipients. If the E-mail server supports named groups of e-mail addresses, an E-mail message may be sent to a combination of E-mail addresses and E-mail groups.

Then from the Events Set-up screen:

- Set-up the required event marker messages. Note that the same message may be used both as an event marker (mark on chart) and as part of an E-mail message (subject or body).
- Select the E-mail Set-up button at the bottom of the Events Set-up screen.
- Enter the list of E-mail recipients, not forgetting the E-mail Administrator address.
- If either of the two E-mail subject fields, or larger E-mail message blocks are required, they will need to be set-up.
- Select the Done button to close the E-mail set-up screen.
- Select the required event to which E-mail message is to be attached, and select. The Add button below the Action list, and from the list of available actions, select E-mail. The Set-up auto E-mailing screen will then be shown.
- Select the required E-mail subject and message body text from the drop-down list boxes.
- Select the required E-mail recipient(s) by highlighting the E-mail address and selecting the Add button. Note that up-to sixteen recipients may be used for each E-mail message, see [“E-Mail” on page 46](#).

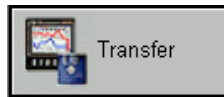
Click in any area on the screen and press F1 on the keyboard to access the related help files.

Recorder Event Viewer

The Events viewer contains all recorded events. The list can be accessed by right clicking on a recorder in the recorders list and selecting Events. The list contains an icon to show the type of event, this is the Apply Filter button. Click on this to display a button bar of options. The events will be shown as the time of the event and any message text which appeared on the recorder.

- World icon button - Show all events.
- Recorder icon button - System messages, showing general messages (recorder icon), warnings (exclamation mark in a triangle) and critical events (red circle with a red line through it).
- Flag icon button - Automated messages, shows only automatic markers.
- Head icon button - Manually entered, shows only user defined messages.
- Yellow bell icon - Alarm events.
- Light bulb button - Digital and relay input events.

For more details on Setting up Events, Event Markers, Counters, E-mailing and Viewing Events, see [“Events System” on page 24](#). To find out more about how events can be graphed, see [“Graphing Events” on page 63](#).



Importing and Exporting of Set-ups

This is where the **Setup** can be imported from other recorders or exported to other recorders via Floppy disk. Click on the transfer button to either **Import** or **Export**, locate the data to import from or export to using the change button. If a disk has multiple sub directories (one for each recorder), point at a specific sub-directory to import just that recorder or the root to import all the recorders. Choose a folder to import from or export to e.g. 'A' drive for a floppy disk.

Click in any area on the screen and press F1 on the keyboard to display the related help files



Hardware related Set-ups

This is to only be used if your recorder has had, or is going to have, modifications to the hardware capabilities. Use this when adding options cards such as an alarm card, digital Input/Output card or comms card. *A separate comms card is not available with the *eZ-trend V5*, Ethernet communication is fitted as standard.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Recorder configuration complete

When all setups are complete press OK, a prompt to save will only appear if changes have been made in the setup window.

Printing Setups

Select the recorder button on the left and right click on the recorder containing the setup required to be printed. Select the print option and choose the setup form the list and press OK.

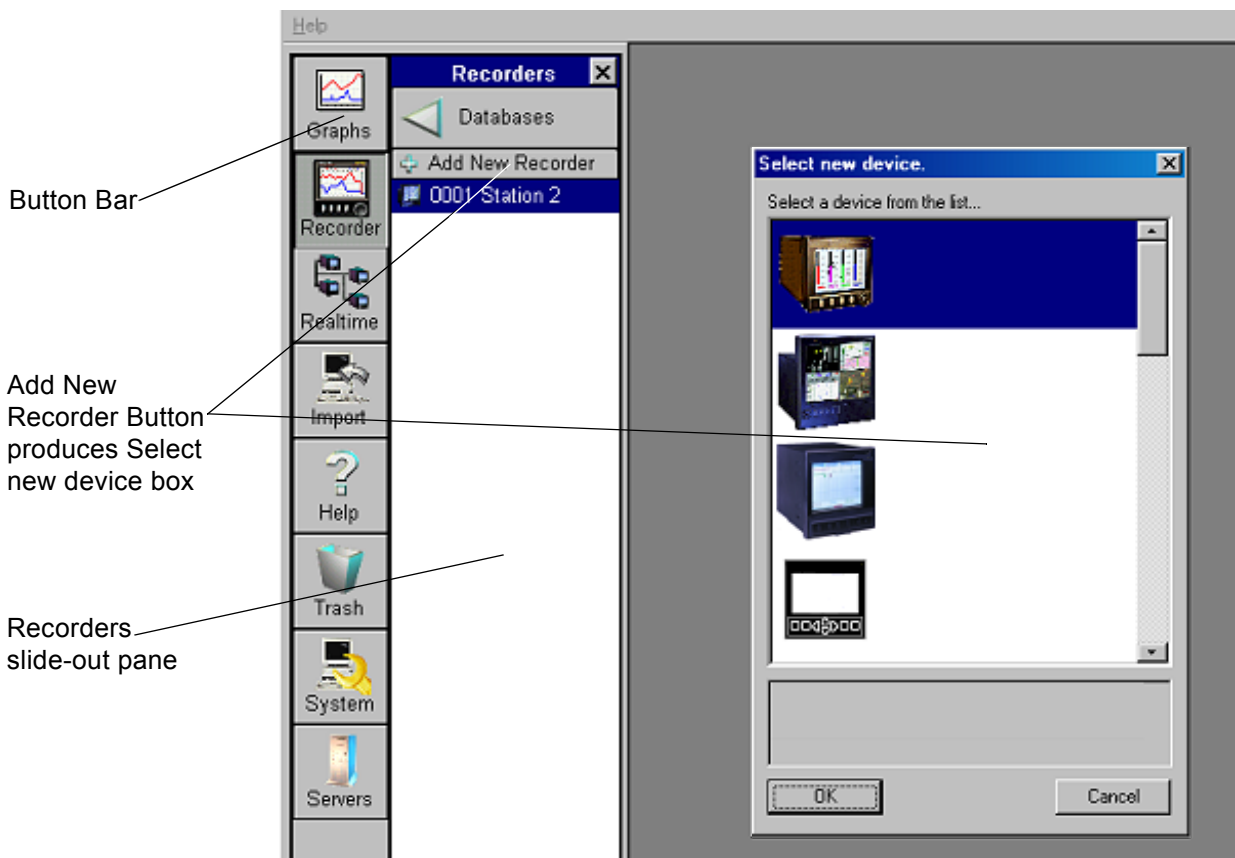
NB. Full recorder configuration can take up many pages. If this is required, select **Landscape** mode to cut down the page count. The **Font** type can be changed if desired. Click **Done** when each tab is finished and **Print** when all tabs are completed.

Each recorder has a **Print Recorder Setup** box with many tabs only active depending on the recorder options available. Navigate through each tab selecting the items of the setup required to be printed. Each tab requires the items to be printed, displayed in the **Available to Print** menu, entered into **Items to Print**. Use the **Add** and **Remove** buttons to switch between lists.

Chapter 7: Getting the most from the TrendManager Pro V5 Suite

Recorders

All the areas listed below are covered in detail in the *TrendManager Pro V5 Suite Help*. Click in any area on the screen and press F1 on the keyboard to display the related help files..



Add a recorder

See [“Start here” on page 11](#), for instructions on how to set up a new recorder.

Delete a recorder

- Go to **Recorders list** in the **Recorders slide-out pane**.
- Drag and drop the desired recorder icon over a **Trash can** or right click, select and delete.

Copy a recorder

- Go to the **Recorders list** in the **Recorders slide-out pane**.
- Either drag the desired recorder on to the blank section of the list or right click on the icon and select copy.
- Select the desired setup from the setups list and click OK.

Edit a recorder

- Go to the **Recorder list** in the **Recorders slide-out pane**.
- Double click or right click on desired recorder icon.
- Click on open.
- Select the desired setup from the **Setups list** and click OK.
- Make any changes, click OK.
- Follow any further instructions.
- Click Ok and confirm changes.

Import data from a recorder

See ["Importing and Exporting of Set-ups" on page 33](#).

See ["Importing via FTP" on page 43](#).

Browse a recorder

Available with *TrendServer* only.

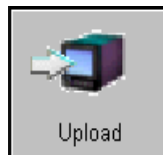


This function allows the user to browse a recorder on the web provided the recorder has been saved to a database with a configured IP Address. The recorder will have had an Ethernet card fitted to configure the IP Address.

Open the recorder by double or right clicking, to reveal the browse button. Activate this button to generate a web browser window. The recorder will automatically be dialled up for viewing on a web page.

Upload button

Available on *TrendServer* only.



Setups can be loaded from a PC to a recorder via Ethernet. An Ethernet card must be fitted, as an option, to the recorder. The recorder must be saved to a database with a configured **IP Address**.

In the recorder slide-out pane, double left click or right click on a recorder to open it. The Upload button will appear if a recorder has been saved to a data base and has an IP Address. This button will upload a setup from the PC to a recorder. Activate this button to produce the select setup box, the set up will now proceed via Ethernet connection.

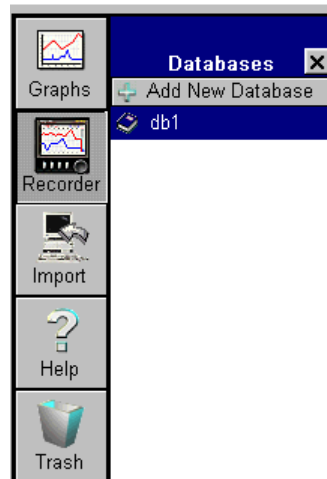
Recorder clash list

A dialog box is produced on import only if multiple devices already exist with matching device ID number or serial numbers.

Databases

All the areas listed below are covered in the *TrendManager Pro V5 Suite Help*.

Click in any area on the screen and press F1 on the keyboard to display the related help files.



Add a Database

- Go to **Database list** in the **Recorders slide-out pane**.
- Click on **Add New Database**.
- Enter a name and description (no duplicates will be accepted) and click OK.

Change the current Database

- Go to the **Database list** in the **Recorders slide-out pane**.
- Click on the icon of the desired database or server/database in *TrendServer*.

This will be the current data base until another is selected.

Add new database dialog

Click on **Add New Database** in the recorders list and the Dialog box will appear. Enter name and description then click OK. The same name may not be used on the same database server.

Database choice dialog

This dialog box appears when importing from a recorder or saving an edited setup. If an existing recorder has been found in the database which has the same ID number and a different serial number or the same serial number and a different ID number, the user will be asked whether to save into this recorders area or to make a new device. If there are many similar recorders, the user is asked to create a new one or select a destination from a list.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

For information on databases on the Comms Server refer to the communications manual.

Server access table.

Server access	Server access	Servers	Databases	Recorders	Pens
TrendServer	TrendManager	Local Server	Initial Database	rec 1	pen 1 pen 2 pen 3 pen 4
				rec 2	pen 1 pen 2
			New Database 1	rec 1	pen 5 pen 6
				rec 2	pen 1 pen 2 pen 3 pen 4
				rec 3	pen 6 pen 7
			New Database 2	rec 1	pen 1 pen 2
		Remote Server 1	Initial Database	rec 1	pen 1 pen 2 pen 3 pen 4
				rec 2	pen 1 pen 2
			New Database 1	rec 1	pen 5 pen 6
		Remote Server 2	Initial Database	rec 1	pen 1 pen 2 pen 3 pen 4
				rec 2	pen 1 pen 2
			New Database 1	rec 1	pen 5 pen 6

Realtime Communications

Only available with *TrendServer* software.

Ensure the hardware for the communications card is connected correctly, refer to the **Honeywell** Communications manual. Realtime Comms connections can be made through an Ethernet or Trendbus RS485.

NB. *Only ethernet communications available on the *eZtrend V5*. [“Appendix D - Ethernet & E-mail” on page 87](#) for more information.

Communications Server

The Comms server software manages the communications status of a recorder across a comms port connection. Data can be configured for logging to a database and realtime data transferred direct through a client connection such as *TrendServer* application software.

Recorders are added to the comms server via connections to communications ports. When recorders are entered, they can be configured for logging data to a database. When the data is logging, the recorder will appear in the database list. Databases can be added using the Database server. Realtime data is setup through the comms server showing client connections i.e. the *TrendServer* application software, and comms port settings. Realtime logging can be done through the *TrendServer* software or through the comms server. All data, logged or realtime, can be interfaced directly from the comms server to the server application software (client connection). To access the **Comms Server** and **Realtime**, ensure the recorders required have been added into the comms server.

For more detailed information on the Comms Server refer to the **Honeywell** Communications manual.

Communications Realtime Pen Settings

- Select the **System** button from the left side of the main screen and click on the realtime icon, this will produce a window containing the realtime pen settings. All these settings are for realtime data only.
- From this box the default for the **Data Rate** and the **Type** of data can be set to either **Sample** or **MaxMin**. Sample will log the actual data value of the last sampled reading. MaxMin will log the maximum and minimum values since the last log.
- Click in the box to retrieve and display event data, if required, then enter a default data rate time.
- Use the left mouse button to move the indicator on the **Realtime Graphing Data Buffer Size** indicator, from 10 minutes to 2 hours. This is the amount of data being displayed in the realtime data graph, To stop the realtime data scrolling, hit the **Pause** button, use the scroll bar at the bottom of the graph to review previous data, see [“Pause button” on page 57](#) and [“Realtime Data Buffer” on page 39](#).

Realtime Data Buffer

- The realtime data has a buffer of time which can be set by the user so a timed amount of data is stored in the buffer. This buffer is from 10 minutes to 2 hours, then the oldest data will disappear from the realtime graph.
- Go to the **System** button down the left side of the main screen, and select the realtime icon. See [“Communications Realtime Pen Settings” on page 39](#).

Realtime Comms logging



Left click on the **Realtime** icon from the tool bar down the left side of the main screen. This will produce the **Recorders pane** displaying the recorders that are available on the comms server. From here the user can also see which server the comms server is using, which pens are available on each recorder and the comms server status.

The instructions listed here include selecting a destination server and database.

- Right click on the recorder and select **Log** to produce the **Logging Configuration** window. The same window is in the Comms Server.
- Designate a destination server i.e. **Local Server** being your own PC, and a destination database to store the logged data.
- Select a pen from the 'Pens available to be logged' window and the **Add Pen to Selection** button will be enabled, OR
- Select **All Pens** and the **Logging Pens Configuration** box will appear.
- Select **Log Rate** from 20milliseconds up to 24 hours and the **Type** of logged data, choose from **Sample** or **MaxMin**. Sample will log the actual data value of the last sampled reading. MaxMin will log the maximum and minimum values since the last log.
- Click on the **Send Event Data** if you require the event data to be logged.
- Click on the **Start Logging** button when complete. This will enable the logging to the designated database.

The window will now display the name of the database, which pens are being logged, the log interval and the type of logging.

To view the database go to the **Recorder** icon down the left side of the main screen, and select the database designated for that recorder.

Add pens for logging

As each pen is selected, or all pens depending on the button selected, the Logging Pen Configuration box appears so the Log Rate and Type of logging can be set for each pen individually or all pens.

When the pens have been selected they will appear in the bottom window, click on Apply to enable the pens to log. Once the pens are in the 'Pens logging to selected database' window they can be selected and the Edit and Delete button become active. The Edit button allows the logging rate or type of logging to be changed.

There is also a Database Events Logging tick box that allows any events to be logged to the database.

Summary of Logging Changes - If any changes are made using the Edit button, the Summary of Changes button becomes active, this will show the last changes made to any of the pens for this configuration only.

The Delete button will take the pen out of this window and put it into the window showing available pens for logging. Logging will stop for this pen.

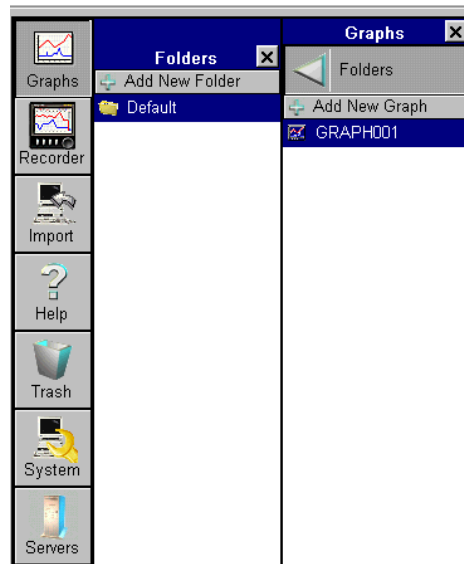
For more information on Realtime Comms refer to the **Honeywell** Communications manual.

Folders

All the areas listed below are covered in the *TrendManager Pro V5 Suite Help*.
Click in any area on the screen and press F1 on the keyboard to display the related help files

Graph Folders

This is a list of folders in which the user can organise their graphs.



Add a folder

- Go to the **Folders list** under the **Graphs slide-out pane**.
- Click **Add new folder**, enter a name and click OK.

Move a graph between folders

- Go to the **Folders list** in the **Graphs slide-out pane**
- Select a graph and drag it into the destination folder.

Delete a folder

- Go to the **Folders list** under the **Graphs slide-out pane**.
- Drag and drop over a trash can to delete.

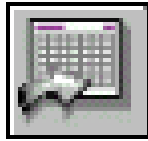
Copy a folder

- Go to the **Folders list** under the **Graphs slide-out pane**.
- Drag the folder onto a blank area of the folders pane or double click and select copy.

Rename a folder

- Go to the **Folders list** in the **Graphs slide-out pane**.
- Double click on the folder to bring up the control panel and click on the rename button.

Exporting data to a spreadsheet



Available only on *TrendManager* and *TrendServer*.

This function is found on the left side of any graph, and will allow the user to export data from a graph to a spreadsheet package such as Excel or to an E-mail.

All the areas listed here are covered in more detail in the *TrendManager Pro V5 Suite Help*. Click in any area on the screen and press F1 on the keyboard to display the related help files.

When exporting a graph to a spreadsheet, ensure the graph is displayed at the desired size. Click on the **Spreadsheet export** button, by selecting a graph from the graph slide-out pane, to expose the dialog box. If point markers are being displayed on the graph be sure to check the 'Overview of Data' box is ticked otherwise every single point marker will be exported. This could account for a lot of data, instead a summary of data is written to the files. In overview mode, maximum and minimum values are written where data points have been disregarded. This function is language sensitive for time/date formats.

Point markers can be switched off using the Switches button at the top of the Spreadsheet icon button bar.

Export Data

- Pen Readings - exports pen data currently on view in the graph area.
- Totaliser Readings - exports totals data currently in the graph area.
- Overview of Data - exports a summary of data is written to file. Enabled by default.
- Local Format - exports using non decimal format if the users PC is set up that way. Uses the native format for that country.

Time/Date Format

- Select Lotus 1-2-3 - This will export files in Lotus 1-2-3 format not in text. Lotus format is the number of seconds elapsed since 1970. Can be applied to graphing.

Auto File Name Format

- Traditional DOS - This is a naming format which allows the user to enter a six character tag which has the trace number attached to the end of the file name. Used on older type of networks.
- Long File names - Attaches a tag to the beginning of the file name and an extension to the end of each pen exported to include the recorder name and pen name.

Set to:-

- Excel - exports to Microsoft™ Excel 97 or later. Auto starts with the exported files.
- E-mail - PCs using a MAPI compliant E-mail programme e.g. Outlook, Express, will open the E-mail programme automatically, creating a new e-mail with the selected files attached.

Click on Export when complete and enter file name. Click done to return to graph.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Importing from Directory

The Import button on the left will produce the **External Import** box. The source location will default to '**From Directory A:**', there is a **Change** option available to select a different directory. Select whether to import **data** or **a setup** from an external storage device. **Auto graph the data** is active by default, select if you wish to **Make a log file in the program directory**. Ensure a disk is present in the drive and click on yes to Import from the external device.

Importing via FTP

Available on **TrendServer** ONLY.

TrendServer uses FTP/IP (File Transfer Protocol / Internet Protocol), this is the transfer of data between a computer and a recorder or between two or more computers. Every Windows PC has FTP capability built in.

TrendServer offers the ability to import data from recorders via an Ethernet connection. This is standard on all recorders with an Ethernet card.

Web browse facility available if recorder has been saved to a database and has an IP Address. See ["Browse a recorder" on page 36](#).

FTP Import

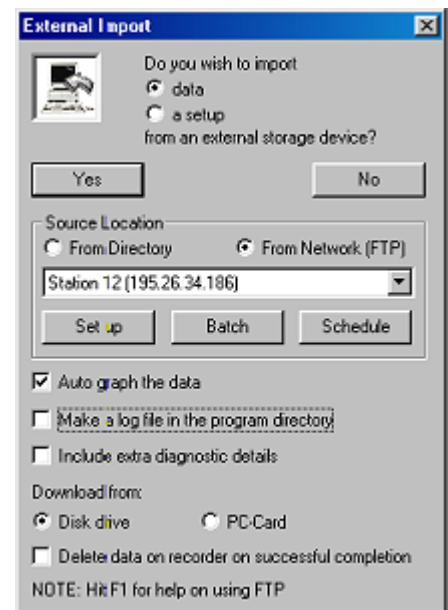
Click on the Import button to produce the External Import box. For import via FTP select **From FTP** as a **Source Location**. This will reveal more of the box giving download information, see ["FTP Set up" on page 44](#). Activate any further options as required from Auto graph the data and/or Make a log file in the program directory. Select **Disk drive** or **PC card*** to download from. Delete data on recorder on successful completion. In the **Source Location** window 'Batch Run' is displayed, this is where the recorders IP address is entered. The recorders will be listed here after they have been entered into the FTP Setup. *PC card option not available on the **eZtrend V5**.

Each recorder is identified by a unique Internet number known as an Internet Protocol address or IP address. An IP address must be obtained from a local Internet service provider or Network information centre. If the recorders and **TrendServer** are on the same local network, a number can be selected from a range of pre-allocated numbers. These numbers are listed in the help file page 'How to Get by with FTP', plus full setup instructions including how to add the IP address to the recorder.

For more details on IP Addresses see your IT system administrator.

Use the help pages within the **TrendManager Pro V5 Suite** to give a more detailed breakdown of each stage for setting up FTP.

Click in any area on the screen and press F1 on the keyboard to display the related help files.



FTP Set up

Click on **Setup** in the **External Import** box to produce the **FTP Recorder Manager**, this will be empty at first. Click on **Add** to add a new recorder, the **Recorder Setup** box will appear. To modify any existing recorders either select **Edit** or double click on the entry displayed in the box, this will also produce the **Recorder Setup** box. **Remove** will delete the selected recorder from the list. Press **Done** when all setups are complete.

In the **FTP Recorder Setup** box enter the IP Address, if known. If there IP Address is not known click on **Look up the IP address from the recorder name** button. This will translate the recorder's name to an address. Enter a description and click OK. The recorder's address will be checked when a download is attempted.

Click on **Look up the IP address from the recorder name**, to locate the recorder's address from its network name i.e. *myrecorder@honeywell.com/sensing*. Enter the name and click **Find**, the address will appear if it has been found. Click on **Use** for the recorder to be added into the system. If unsuccessful, check the IP address, DSN server and Internet connections.

FTP Batch set up

Use the **Batch** button to select a list of recorders required for data download. All available recorders are displayed in the **FTP Batch Setup** page, click on the Available Recorders in the window on the left, use the **Add** button to transfer that recorder to the Recorders in Batch window. Select OK when your selection for the batch list is complete. To start download return to the **External Import** box, select from the drop down list and click on 'Yes'.

Refer to the help pages within the software for a more detailed account of FTP batch download setups. For specific recorder help click on any item and press the F1 key.

FTP Schedule Setup

Use the **Schedule** button to produce the **FTP Schedule Setup** box. Use this to manage and download a list of selected recorders at specific times. This box will be empty on first use, click on **Add** for a new entry. This will generate the **Schedule settings** box used for adding and editing schedules. Existing schedules cannot be edited whilst the schedule is active.

Description - User identifiable text for schedule recognition.

Destination Database - Database location for saved data. Lists available servers and databases.

Recorder windows - The left window lists the recorders available to download data from, the right side lists the recorders that have been selected to download from. Use the Add/Add All and Remove/ Remove All buttons to select and deselect recorders.

Select when to perform the download - **Single Shot** does the download once, **Interval** will download at a specific time and date, these boxes become active when this option is enabled. Enter at what interval the downloads should take place. **Selected Days** reveals the days of the week at the bottom of the window so the recorder data can be downloaded on predefined days.

Download from - Select from the recorder's internal **Disk drive**, 1.44 MByte floppy, LS120/Zip* or PC card if fitted. Select the **Delete files on recorder** option if when the import is successful to delete all the files from that recorder, freeing the disk space. **Receipt in log file** option will create a file in the program directory called schedlog.txt. This will hold all the schedule downloads when activated. This file can get quite big if used regularly. **Write detailed log file** will be available and will add more detail to the standard log file, this file can also become very large. Use with caution. **Synchronise recorder clock with PC**, if there is more than five seconds difference between the recorder's clock and the PC then the recorder will update in line with the PC.

*LS120/Zip drives or PC card are not available on the **eZtrend V5**

Schedule settings

Description: Regular Backup

Destination database: Local Server - monday [Select]

Select the recorders you wish to add to the download from the left list and add them to the right

Available Recorders		Recorders to download from	
Recorder Name	IP Address	Recorder Name	IP Address
Furnace Temp	222.222.222.222	1234 Plant 1	195.26.34.180
Voltage Monitor	122.122.122.122	Tank Level	111.111.111.111
		The Shed	211.211.211.211

Buttons: Add, Add All, Remove, Remove All

Select when to perform the download:

☐ Single Shot

☐ Interval

☒ Selected Days

Time: 15:14:00 Date: 22 May 2000

Interval: 0 Days, 0 Hours, 1 Minutes

Download from:

☒ Disk drive ☐ PC-Card

☒ Delete files on recorder

☒ Receipt in log file ☒ Write detailed log file

☒ Synchronise recorder clock with PC

Days of the week:

☐ Sunday ☐ Monday ☒ Tuesday ☐ Wednesday ☐ Thursday ☒ Friday ☐ Saturday

Buttons: OK, Cancel

When all details are completed for download, return to the **External Import** box and click on 'Yes'. The **FTP Import** box will appear displaying the download progress.

Refer to the help pages for a detailed breakdown on How to: Use the Scheduler, including the FTP Schedule Manager and the FTP Scheduler Edit page. Click in any area on the screen and press F1 on the keyboard to display the related help files.

System status



All the areas listed below are covered in the *TrendManager Pro V5 Suite Help*. Click in any area on the screen and press F1 on the keyboard to display the related help files.

Available only on *TrendServer*.

Activate this button to reveal four more options.

Password

Password control allows an Administrator to manage password accounts. These accounts have a user name and password with different levels of authority which restrict access to the more system orientated areas of the program. For more information, see [“Passwords” on page 47](#).

Status

The status button toggles the system information panel on or off, this shows a list of text messages linked reporting major events in the system.

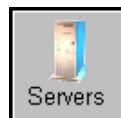
E-Mail

The E-mail function is for setting up default accounts and destinations for any part of the program that uses E-mail. This is for use when exporting to spreadsheets. Also see [“Event E-mail setup” on page 30](#).

Realtime

This is the *Realtime Pen Settings* dialogue box configuring pens for realtime logging. Enter the *Data Rate* and the *Type* of data to be logged, either *Sample* or *MaxMin*. Sample data will log the actual data value of the last imported reading, Max/Min will log the maximum and the minimum values since the last log. There are a list of rules concerning priorities for data rate and data type when accessing a recorder on line, refer to the **Honeywell** Communications manual.

Server



Available only on *TrendServer*.

All the areas listed below are covered in the *TrendManager Pro V5 Suite Help* and in the *TrendManager Pro V5 Suite Software User manual*.

For recorder specific help, select any item on the screen for enquiry and press F1 on the keyboard.

Click on this button to produce the *Remote server list*. From here the user can access the *Server database list* by clicking on *Database*. Select a server and close the list, all the recorders and databases that will be displayed will be held on that selected database server.

For more information on server availability refer to the [“Server access table.” on page 38](#).

Add a Remote Server

- Go to the *Server List* in the *Server slide-out pane* (only connected servers listed).
- Click *Add new server*.

- Enter the remote machine's IP address and name into the dialogue box. Or use this button 'Look up the IP address from the machine name' to translate a name to an address.
- Click on OK.

If the new server icon appears with a red cross on it, there has been a link problem. Verify the IP address is correct and the machine is turned on. See the message window at the bottom of the screen for details. Double click on the server icon to retry connection. Double click on the server icon to reload all of that server's databases.

Delete a server

- Go to the **Server list** in the **Server slide-out pane**.
- Either drag and drop the selected server icon over the nearest **Trash can** or right click and select delete.

Change the current Server

- Go to the **Server list** in the **Server slide-out pane**.
- Click on the desired server, this will now be the currently selected server.

Passwords

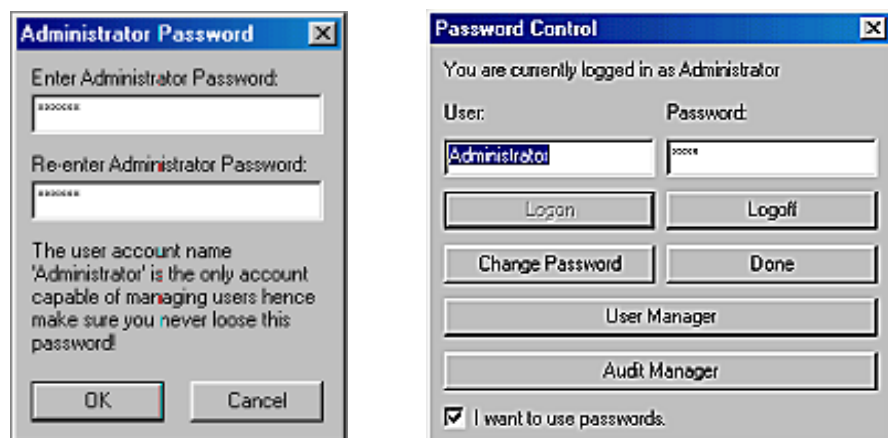
Only available from **TrendServer**, setting up passwords allows the user to restrict access to certain parts of the program.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Click on the **System** button to reveal the **System list**, select the Password icon. If the passwords have not been used before, the user will be prompted with the **Initial Password Setup** box. Enter a password of your choice, twice. Press OK and the **Password Control** box will appear.

Password Control

Enter your user ID as Administrator and your password, then select **Logon**. From this screen the Administrator can **Logoff**, **Change Password**, select the **User Manager** or deselect the box to disable the password system.

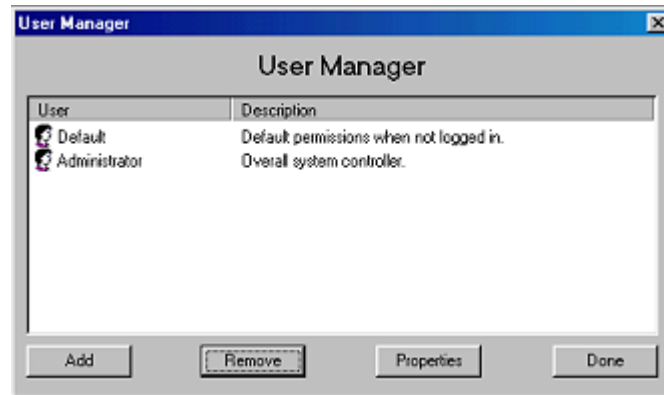


Change Password

To change a password, select Change Password and enter the new password twice. This can only be done by the Administrator.

Password User Manager

The User Manager screen is designed to add, remove and edit passwords and password access. There are two users already loaded into the password system, these are known as password accounts. The **Default** account is when no users are logged on and access is kept to a minimum. The Administrator account is recommended to be kept with full access.



To **Add** or **Change** the properties of a user select this button from the **User Manager** screen and click on Add or Properties. This will reveal the **User Properties** box.

To add a new user make sure nothing is selected in the box and click on Add. Enter the User's Name, a Description for identification and the Password, twice. To change the properties of an existing user, select the user from the User Manager and click on properties. See ["Password access table" on page 49.](#)

The **User Templates** allow access permissions to pre-set commonly used configurations. Select a template and click on Apply.

Use the **Advanced access permission** for setting up a user to a specific profile not supported by the templates. Double click on an area to reveal the categories available for access. Boxes will be marked to show which categories can be accessed for each particular template. Tick any extra boxes as required. Press OK when all categories have been selected and the users required password access is complete.

The Administrator is the only one who can disable the password system.

If the password gets lost contact **Honeywell** for help. Contact number and address is in the **Help** file under **Contact information**.



Password access table

Access permissions available		Guest User	Basic User	Standard User	Power User	Default	Admin-istrator
GRAPHING	Open	✓	✓	✓	✓	✓	✓
	Rename		✓	✓	✓		✓
	Delete		✓	✓	✓		✓
	Print	✓	✓	✓	✓	✓	✓
	Export data from		✓	✓	✓		✓
	Graph Events		✓	✓	✓		✓
	Add		✓	✓	✓		✓
	Copy		✓	✓	✓		✓
	Move		✓	✓	✓		✓
	Save		✓	✓	✓		✓
FOLDERS	Create		✓	✓	✓		✓
	Rename		✓	✓	✓		✓
	Copy		✓	✓	✓		✓
	Delete		✓	✓	✓		✓
RECORDERS	Add			✓	✓		✓
	Copy			✓	✓		✓
	Delete			✓	✓		✓
	Edit Rec Setup			✓	✓		✓
	View Events			✓	✓		✓
	Print Rec Setup			✓	✓		✓
	Web Browse			✓	✓		✓
	Upload Setup				✓		✓
DATABASE	Add			✓	✓		✓
	Change		✓	✓	✓		✓
SERVER	Add				✓		✓
	Delete				✓		✓
	Change				✓		✓
IMPORT	Disk Import Data			✓	✓		✓
	FTP Import Data				✓		✓
	Disk Import Setup			✓	✓		✓
	FTP Import Setup				✓		✓
Communications	Add Server				✓		✓
	Delete Server				✓		✓
	Change Server				✓		✓
	Status Window			✓	✓		✓
	Configure Logging			✓	✓		✓
	Graph Realtime data			✓	✓		✓
SETTINGS	E-Mail			✓	✓		✓
	Comms Admin				✓		✓
	Realtime			✓	✓		✓

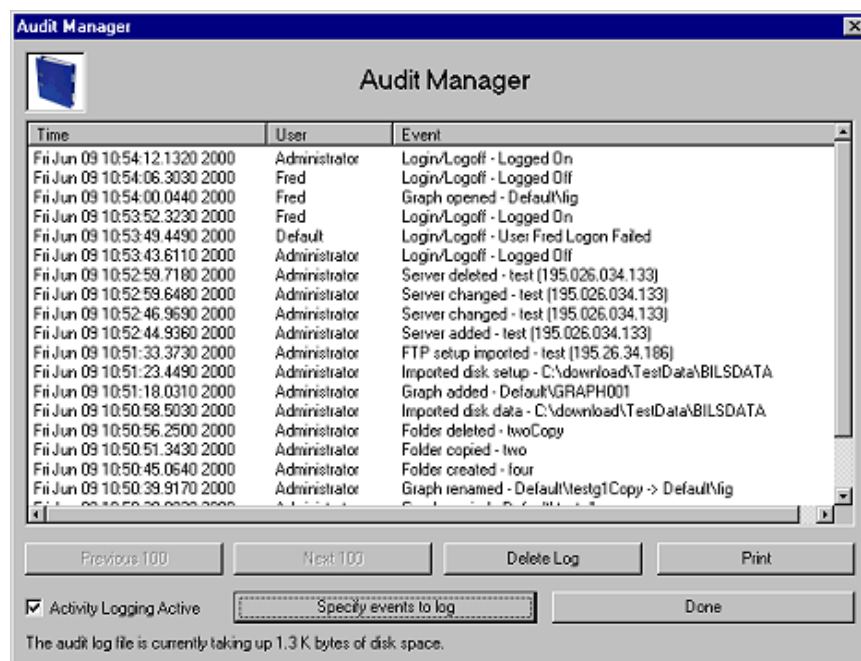
When the Administrator is logged off the password system is in the Default state. The Administrator and the Power User have access to the same areas apart from the Administrator can setup and manage the password accounts and has access to the Audit Manager.

Audit Manager

The Audit Manager is only available on *TrendServer*, and is accessed through the password system at Administrator level only. The Audit Manager facility allows the Administrator to configure, log and view all actions that have occurred within the software.

Click on the **System** button on the main screen tool bar and select **Passwords**. Only the Administrator logon reveals the Audit Manager option.

The Administrator can specify which actions get logged to the Audit trail.



The Audit manager provides an Audit trail from when a User logs on, showing the time and date, to what actions the user performs within the software including changes to

- Graphing (adding, deleting, copying, printing moving, exporting etc).
- Recorder setup, hardware added or deleted.
- Importing data, setups.
- System changes, adding or deleting Databases or Servers.
- Adding, deleting or copying Recorders and Folders.
- Setting changes, E-mail, LogOn/Off, Passwords.

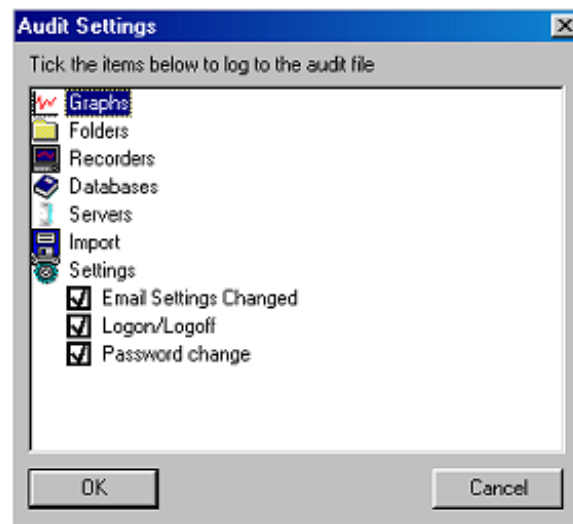
In order to log User's actions, the **Activity Logging Active** box should be checked.

The print button prints a document of all the currently loaded 100 (or less) actions.

Delete log will remove all of the Audit trail.

Specify which events to log

The **Specify events to log** button produces the **Audit settings** page which enables the administrator to determine which actions to log. Double click to reveal the contents of each heading, click on each item to select or deselect. Each ticked item will be logged to the Audit Manager.



Chapter 8: Graphing in the TrendManager Pro V5 Suite

Graphing

The *TrendManager Pro V5 Suite* allows the user to prepare data imported from **Honeywell** recorders as a graph. All the areas listed below are covered in the *TrendManager Pro V5 Suite Help*. Click in any area on the screen and press F1 on the keyboard to display the related help files.

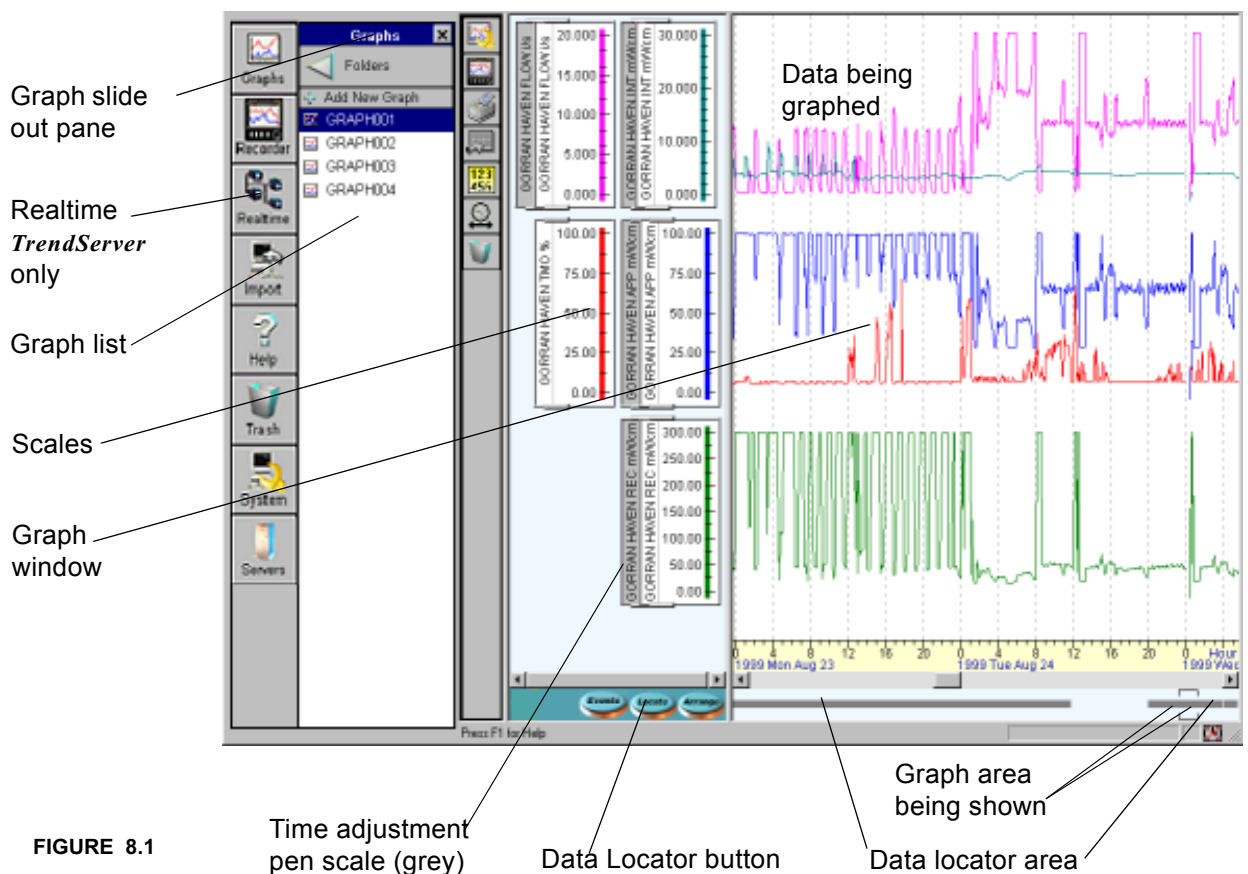


FIGURE 8.1

Graph list

This is a list of the stored and open graphs in the currently selected folder. [See "Folders" on page 41.](#)

Add New Graph

- To open a graph click on the **Graph** icon at the top of the **Button bar**. This displays the **Graph slide-out pane**.
- Click on **Add New Graph** and a blank graph will appear.

Graph a recorder

- To graph a device go to the recorders list under the **Recorder slide-out pane**.
- Drag and drop the desired device either over a blank section of backdrop (to make a new graph) or over an existing graph to add traces to it. Data can be imported without first closing graphs, relevant graphs will auto update

Traces on graphs

- To add traces to a new or existing graph go to the Add Data to Graph icon and click on **Pens** to reveal the **Pen list**, see [Figure 8.2 on page 55](#). Drag and drop the selected pen(s) over to the scale or trace areas of the graph.
- Traces can be deleted easily by dragging and dropping the pen scale over a **Trash can**.
- Traces can also be added by double clicking on them.

Copy a graph

- Go to the **Graphs list** under the **Graphs slide-out pane**.
- Either drag the selected graph onto a blank section of the **Graphs list** or right click and select copy. For moving graphs between folders, see ["Move a graph between folders" on page 41](#)

Rename a graph

Graphs can only be renamed when none are open or the first time it is saved.

- Go to **Graphs list** under the **Graphs slide-out pane**.
- right click on the graph icon and select rename.
- enter the new name in the box provided and click on OK.

Delete a graph

- Go to the **Graphs list** under the **Graphs slide-out pane**. Either drag the desired graph icon over the nearest **Trash can** or right click on it and select delete.

Graph display features

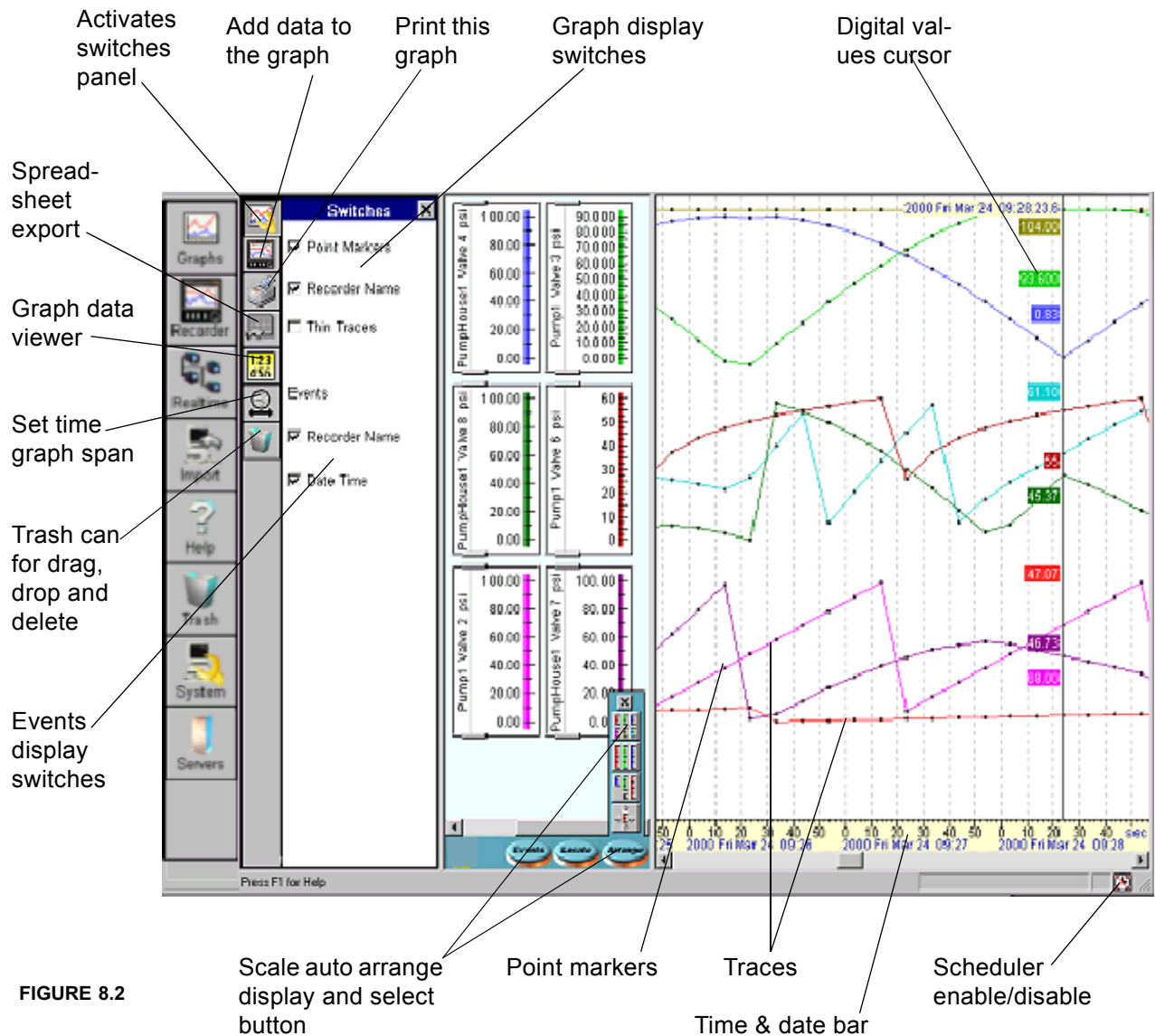
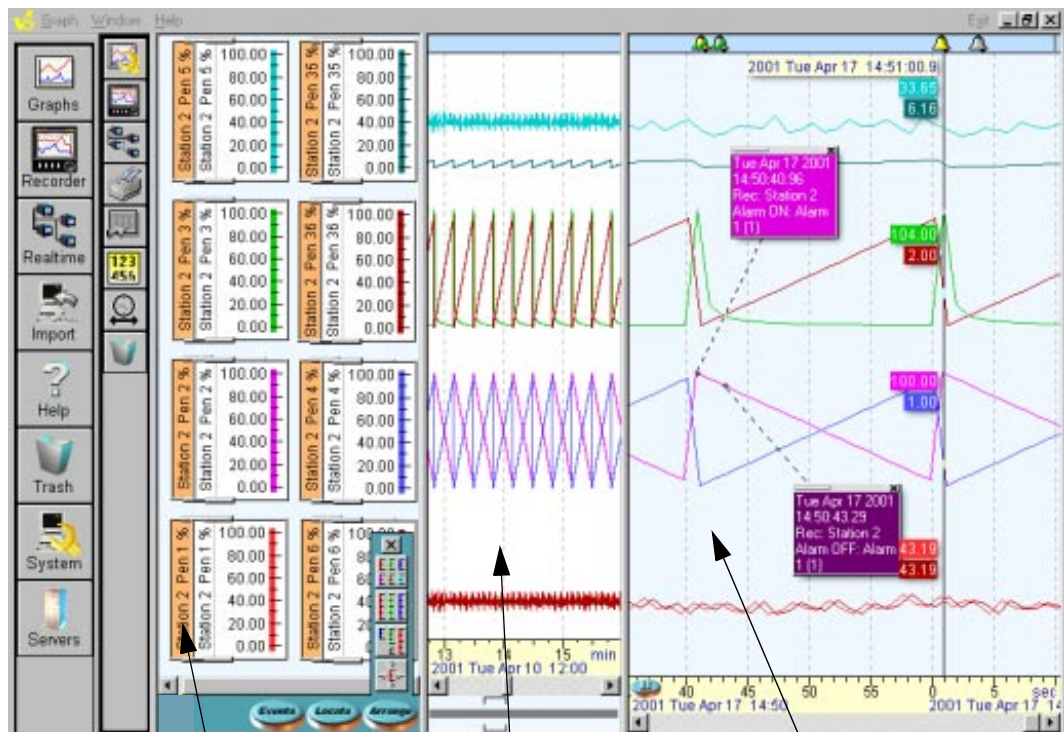


FIGURE 8.2

For specific help, click on any part of the graph and press the F1 key on your keyboard to display the related help files.

Realtime Graphing

Graphing Realtime Data



Realtime pens
shown in orange

Logged data or data
from a disk

Realtime data from the
same recorder

To display realtime data on a graph left click on the **Realtime** icon from the tool bar down the left side of the main screen. This will produce the **Recorders pane** displaying the recorders that are available. Click on the Comms server tab to view a list of the servers. The Pens tab will display which pens are available on the recorder.

- Either, select the recorder from the list and drag it across the screen into the blank graph area, this will display all the pens on the recorder. Or, alternatively, select the **Pens** label at the top of the **Recorders pane** and select individual pens and drag them on to the blank graph area.
- Maximise the graph  and use the **Arrange** button, at the bottom of the graph screen, to organise the pen traces and scales. The graph is split into two areas. The area to the right, with a blue tint, is the realtime graph area. The white area between the scale and the realtime graph area is for graphing logged or historical data. See ["Graphing Realtime Data" on page 56](#).

- If there is no data being displayed in the realtime graph area, check the comms server is active, then check the comms server status to see if the recorder is **Talking** or **Waiting**. If there is still no realtime data being graphed, check to see if the pause button at the bottom of the realtime graph area has been activated, if so, click to deactivate.
- Data will graph across the screen from right to left, the furthest point to the right showing the current time. Place the cursor in the **Date/time bar** running along the bottom of the graph area. use the right and left mouse buttons to zoom in and out on the data. Ensure the time is synchronised between the recorder and PC. The time displayed on the graph is the time set on the recorder, where ever in the world it may be. See [“Realtime graphing across Time Zones” on page 57.](#)

Right click in the graph area to produce the **Digital Values** cursor, hold the right mouse button down to drag the cursor to any point in the graph area.



Pause button

The **Pause** button stops the automatic scrolling, the data will continue to arrive in realtime, but the current time will stop on the right side of the screen. This is to help the user review the realtime data that has passed off the graph to the left. The **Horizontal scroll bar** at the bottom of the screen can be used to scroll back and survey the previous data. To zoom in on a specific area of data, left click the mouse button, hold and drag over the selected area in the **Time/date zone** at the bottom of the graph area.

When the pause button is deactivated the auto scrolling will resume and the current time will be displayed at the furthest point on the right side of the screen. Only time is frozen, no data is lost, this includes event data if this option has been selected.

Realtime graphing across Time Zones

Realtime graphed data appears from the right hand edge of the screen and scrolls to the left. The right hand edge represents the time 'Now'. If an event occurs or a spike, it happens at the moment you see it appear on the graph. The time not be the same as the date line shows on the graph. The recorder has to be synchronised with the PC through the same Comms Server.

Retrieving data via another Comms Server may give a different time setting. If the user is accessing data from a recorder in a different time zone, the time displayed on the graph will be the time set for the PC.

Example: User UK1 wishes to access data using the software on his PC in the United Kingdom, the data is on a recorder in Washington D.C. USA. The Comms Server in the US and is synchronised, on US time, with the recorder. User UK1 sees an event occurs at 4.00pm (UK time) on the graph it would actually have happened at 11.00 am on the recorder in Washington D.C. The graph will show the time lines as for real UK time.

Data logged to disk will store the time as displayed on the PC and the recorder once they have been synchronised.

For specific help, click on any part of the graph and press the F1 key on your keyboard to display the related help files.

Graphing different types of data

Realtime data is displayed as a scale with an orange strip down the left side of the scale, realtime data comes directly over the comms connection via the comms server.

Historic data scales are sky blue, this is data that has been received via comms and stored in a database

Logged data or data from disk will have a completely white scale, this is data that has been transferred or imported from a disk or via FTP.

Time adjustment pen scales have a grey strip down the left side, this is data from pens that have had a time adjustment due to day light saving time.

Realtime data and **Historic** data comes over the comms via the comms server. The historic data is stored in a data base and both sets of data can be displayed at the same time. First, make sure the comms server is active.

See "Graphing Realtime Data" on page 56.

Adding historical data to a realtime graph

Historical data from a recorder on a database in the comms server can be added to a graph already displaying realtime data. The realtime data is graphed in the blue tint section of the graph area. Drag a recorder or pens from a recorder, on a database in the comms server, on to the white middle section of the graph area.

For specific help, click on any part of the graph and press the F1 key on your keyboard to display the related help files.

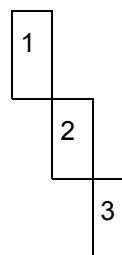
Graph Data Viewer



Select this icon from the left side of the graph area to view data as a table. The **Data Viewer** either displays an overview of data (every pixel) currently visible in the graph window showing times and values that have been averaged, or as actual data points for the same span. The left column displays the time and date of each data value.

This example shows 3 pixels and their widths measured in max/min time readings

The screen area may span 1000 pixels and each pixel may contain 100 data points. This can all be viewed by the **Data Viewer** using **Actual logged Data Mode**. The **Overview mode** gives a minimum and maximum reading per pixel effectively compressing all the data points in the pixel. On the Overview mode the time between each reading is divided up evenly from the width of the graph.



Pixel 1 width
15.02.40.0000 min reading
15.03.19.9999 max reading

Pixel 2 width
15.03.20.0000 min reading
15.03.99.9999 max reading

Pixel 3 width
15.04.00.0000 min reading
15.04.39.9999 max reading

Each of the other columns represents an individual pen trace on the graph. If there is no data available, a dash will appear. Single data values will be present in the column unless the pen trace is only logging Min/Max data values, in which case there will be two values in the column separated by a comma. Even if the data has not been set up to log min/max readings the data viewer will do this in the Overview Mode.

If an asterisk* is displayed after the value in overview mode, this indicates that the data values have changed from the previous line. If an asterisk* is displayed in actual data mode, the value was sampled at the time specified on that line.

Data Viewer in Overview mode

Remove recorder name from columns

Actual logged data

Select all

Copy selected data to the clipboard

Print the selected data

Time	RECORDER - T1	RECORDER - P1
Tue Mar 19 1999 15:02:40.0000	0.693, -0.080*	-0.005, -0.080*
Tue Mar 19 1999 15:03:20.0000	0.693, -0.699*	-0.005, -0.005*
Tue Mar 19 1999 15:04:00.0000	0.673, -0.657*	-0.002, -0.005*
Tue Mar 19 1999 15:04:40.0000	0.670, -0.657*	-0.002, -0.005*
Tue Mar 19 1999 15:05:20.0000	0.711, -0.679*	-0.002, -0.005*
Tue Mar 19 1999 15:06:00.0000	0.735, -0.722*	-0.002, -0.007*
Tue Mar 19 1999 15:06:40.0000	0.727, -0.722*	-0.005, -0.005*
Tue Mar 19 1999 15:07:20.0000	0.732, -0.729*	-0.002, -0.007*
Tue Mar 19 1999 15:08:00.0000	0.722, -0.701*	-0.002, -0.005*
Tue Mar 19 1999 15:08:40.0000	0.698, -0.695*	-0.005, -0.005*
Tue Mar 19 1999 15:09:20.0000	0.701, -0.698*	-0.002, -0.007*
Tue Mar 19 1999 15:10:00.0000	0.693, -0.657*	-0.002, -0.005*
Tue Mar 19 1999 15:10:40.0000	0.678, -0.652*	-0.002, -0.005*
Tue Mar 19 1999 15:11:20.0000	0.747, -0.704*	-0.005, -0.005*
Tue Mar 19 1999 15:12:00.0000	0.729, -0.729*	-0.002, -0.005*
Tue Mar 19 1999 15:12:40.0000	0.724, -0.711*	-0.005, -0.007*
Tue Mar 19 1999 15:13:20.0000	0.693, -0.691*	-0.002, -0.002*
Tue Mar 19 1999 15:14:00.0000	0.722, -0.699*	-0.002, -0.005*
Tue Mar 19 1999 15:14:40.0000	0.750, -0.724*	-0.002, -0.007*
Tue Mar 19 1999 15:15:20.0000	0.765, -0.747*	-0.002, -0.005*
Tue Mar 19 1999 15:16:00.0000	0.768, -0.750*	-0.005, -0.007*
Tue Mar 19 1999 15:16:40.0000	0.771, -0.760*	-0.002, -0.002*
Tue Mar 19 1999 15:17:20.0000	0.758, -0.759*	-0.002, -0.010*
Tue Mar 19 1999 15:18:00.0000	0.768, -0.763*	0.001, -0.005*
Tue Mar 19 1999 15:18:40.0000	0.763, -0.750*	0.005, -0.005*
Tue Mar 19 1999 15:19:20.0000	0.765, -0.737*	0.002, -0.007*
Tue Mar 19 1999 15:20:00.0000	0.708, -0.701*	-0.002, -0.007*
Tue Mar 19 1999 15:20:40.0000	0.701, -0.696*	-0.002, -0.005*

Data Viewer in Actual Logged Data mode

Displaying data from the same graph and time as the overview mode.

FIGURE 8.3

Time	RECORDERS - TOW	RECORDERS - POSTB
Tue Mar 09 1999 15:03:01.1875	-0.080*	-0.090*
Tue Mar 09 1999 15:03:16.1875	0.693*	-0.005*
Tue Mar 09 1999 15:03:31.1875	0.683*	-0.005*
Tue Mar 09 1999 15:03:46.1875	0.665*	-0.005*
Tue Mar 09 1999 15:04:01.1875	0.673*	-0.002*
Tue Mar 09 1999 15:04:16.1875	0.667*	-0.002*
Tue Mar 09 1999 15:04:31.1875	0.670*	-0.005*
Tue Mar 09 1999 15:04:46.1875	0.667*	-0.005*
Tue Mar 09 1999 15:05:01.1875	0.667*	-0.002*
Tue Mar 09 1999 15:05:16.1875	0.670*	-0.002*
Tue Mar 09 1999 15:05:31.1875	0.678*	-0.002*
Tue Mar 09 1999 15:05:46.1875	0.711*	-0.005*
Tue Mar 09 1999 15:06:01.1875	0.722*	-0.002*
Tue Mar 09 1999 15:06:16.1875	0.735*	-0.002*
Tue Mar 09 1999 15:06:31.1875	0.732*	-0.007*
Tue Mar 09 1999 15:06:46.1875	0.722*	-0.005*
Tue Mar 09 1999 15:07:01.1875	0.727*	-0.005*
Tue Mar 09 1999 15:07:16.1875	0.724*	-0.005*
Tue Mar 09 1999 15:07:31.1875	0.729*	-0.007*
Tue Mar 09 1999 15:07:46.1875	0.732*	-0.002*
Tue Mar 09 1999 15:08:01.6875	0.722*	-0.005*
Tue Mar 09 1999 15:08:16.6875	0.709*	-0.002*
Tue Mar 09 1999 15:08:31.6875	0.701*	-0.002*
Tue Mar 09 1999 15:08:46.6875	0.699*	-0.005*
Tue Mar 09 1999 15:09:01.6875	0.670*	-0.005*
Tue Mar 09 1999 15:09:16.6875	0.665*	-0.005*
Tue Mar 09 1999 15:09:31.6875	0.688*	-0.002*
Tue Mar 09 1999 15:09:46.6875	0.701*	-0.007*

Use the bottom and side scroll bars to reveal all pens and more data values. To re-arrange the columns, place the cursor in between the column headings until a double headed arrow appears. Click and hold down the left mouse button and move the column left or right. Rows of data can be selected by holding down the CTRL key and clicking on the columns required. To select all data, hold down the SHIFT key and select the first and last row required, or use the **Select all** icon.

The icons, displayed on the left, are **Remove recorder name from columns**, this can be used to hide the name to allow more column space. **Show all of the data**, this is not an overview, this is **all** the actual data points.

NB. When using this as it will reveal **all** the data, this could produce a huge list or even refuse and will ask you to resize the graph.

Select all, does exactly that. **Copy selected data to clipboard** copies the selected data on to the windows clipboard for pasting into such as Microsoft™ Word or Excel. To **Print selected data** click on the Print icon to generate two boxes, one to select the font required, then click OK followed by the print setup box.

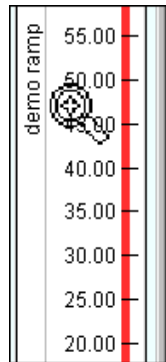
Click in any area on the screen and press F1 on the keyboard to display the related help files.

Graph Set Time Span



This button, on the switches panel, [Figure 8.2 on page 55](#), produces a box where the user can specify an exact start time, date and span of the current graph to be displayed. It is also possible to view the most recent data using the Go to Last drop down box.

Zooming



Y-axis zooming

Y-axis zooming is done in the **Scale window**. Y-axis zooming can be achieved by placing the cursor, which turns into a magnifying glass, over the numbered area of the **Scale window** and left clicking to zoom in (increase size) or right click to zoom out (decrease size). To select a specific area of data stay on the numbered part of the scale, left click, hold and drag. Two horizontal lines will appear to enable the user to select a portion of the graphed data. As you click on the **Scale window** a boxed area appears on the coloured part of the bargraph showing where the data is that you are scaling.

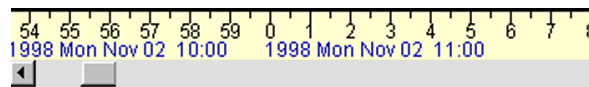
Having zoomed in, full span can be restored by clicking on the restore button at the top right of the scale. If a large arrow appears in the scale, there is no data available for the trace in the current time span window.

X-axis zooming

Take the cursor to the bottom of the graph into the **Time bar** area for X-axis zooming. The cursor becomes a magnifying glass so a left click will zoom in (increase size) or right click will zoom out (decrease size). Another way of 'zooming in' is to select a section of the scale by placing the cursor on the **Time bar**, using the left mouse key, holding and dragging to the left or right over the desired area. Two vertical lines will appear to enable the user to select a portion of the graphed data. Right click to cancel a zoom on the time bar.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

The **Time bars** below show zooming in, increasing the scale in the X-axis.

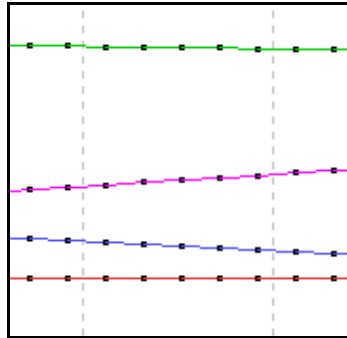


From this,
reading in minutes

to this,
reading in seconds



Point markers



Point markers show the actual logged data points along the trace and are dependent on the logging rate set e.g. if the logging rate is set to one per second then the point markers on the graph will log data every second. Point markers can be added to a graph by going to the **Switches panel**. [Figure 8.2 on page 55](#).

Time adjustment pen

There may be occasions when it is required to adjust the time on the recorder, such as day light saving time. When this occurs and there is an overlap of data, this is recorded on a duplicate pen scale panel hiding behind the original. These can be identified by a grey strip down the left hand side of the scale panel, see [“Arranging Scales” on page 62](#). This is viewed best in **Tile** or **Strip** mode where the **Trace** is shown continuous. The time adjustment pen only shows the data that has overlapped, the trace will continue on the original pen.

Arranging Scales

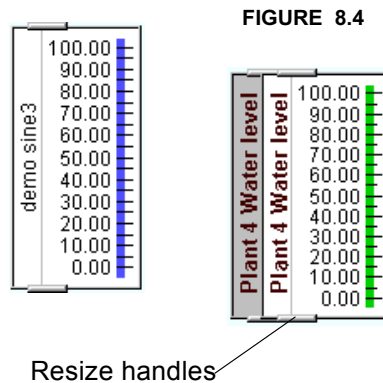


FIGURE 8.4

Scale panels can be arranged by placing the cursor over the left hand side of each scale panel until a hand appears. Holding down the left mouse button and drag the scale panel into the desired position then release the mouse button. Remember the position of each scale panel determines the position, within the graph window, of its corresponding pen data. Scale units will also be displayed where applicable.

Click in any area on the screen and press F1 on the keyboard to display the related help files.

Along the bottom of the scale window is an **Arrange button**. This gives four options for auto arranging the scale panels.



1. The top button automatically generates **Tile** mode, as shown.
2. **Strip** mode is the second button which makes all the scale panels full height.
3. The third arranges the scale panels of different sizes to **Best fit**
4. **Minimise** the scale panels is the bottom button, to achieve the least amount of room taken up.

Resizing scale panels

Scale panels may be reduced or increased in size by using the resize handles, indicated by a small bar at the top and bottom of the scale panel, see [Figure 8.4 on page 62](#). Move the cursor over either handle, *TrendManager Pro V5 Suite* changes the appearance of the cursor from a pointer to a double headed arrow, drag until the required size is achieved and drop.

The area used within the graph window, to display a pen's data, is dependent upon the size of the respective scale panel. If a scale panel is increased by 100% in length, the area used to display that data will also increase by 100%.

Graphing Events



To display events on the graph, activate the **Events** button below the scale window. This will enable a blue events bar at the top of the graph area. The events bar displays single icons representing one type of event or a grey numbered tile which indicates multiple events have occurred. If >100 is displayed in the grey tile, this means 100 or more events have occurred during its span. These can only be viewed when the box reads <100, this is done by zooming in on the event area or by using the Event filter.

Click on an icon in the events bar to display details of that particular event. Click on the grey numbered tile to produce the **Select Events** box. This displays all the events within that tile, click to select and press OK and details of that event will be displayed on the graph.

When an event is selected from the event bar a coloured text box will appear, it can be dragged and repositioned on the graph and a dotted line will indicate where the event actually occurred on the graph. For alarms, the dotted line will point to the place where the pen was triggered.

Single event icons, displayed in the events bar, represent different events:

- A recorder with a green screen - a normal system message.
- A recorder with an orange screen - a system warning.
- A recorder with a red screen - a system problem.
- A bell - an alarm (coloured if the alarm is active).
- A flag - a marker.
- A person - user generated text.
- A light bulb - digital input or relay (illuminated when active).

Annotating your Graph

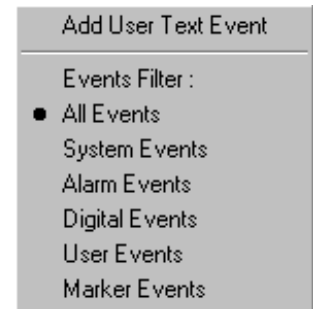
User defined text can be added to any graph retrospectively, right click in the events bar at the point where the text is required. This will produce the **Add User Event** box, check time and date, add the text and press OK. The text entered will appear with that event. The time and date will automatically be added to the text displayed.

Text boxes, user defined or linked to an event, can be dragged and re-positioned anywhere on the graph. Each text box has a grab handle in the top left corner and a close box (X) in the top right corner. A white hand and a dotted leader line indicates the event box can be repositioned anywhere on the graph e.g in the exact place where the event occurred. The leader line can be moved in the vertical plane by clicking and holding the end bar. User text boxes will be saved to all recorder being graphed in that window.

Events Filter

Use the **Events Filter** to display only the type of event you want to view, such as Alarms, Digital or System events. [Figure 8.5 on page 64.](#)

Right click on the Events bar at the top of the graph to produce the Events Filter menu. Click on the type of events required to be displayed, all other events will be hidden. Click directly on an event icon, (e.g. the bell icon represents the event is an alarm), this will select that particular event, indicated by a tick. Once selected it will always be displayed even when that type of event has been filtered out.



For details on setting up Events using *TrendManager Pro V5 Software*, see [“Events System” on page 24](#)

Data Locator



FIGURE 8.6

Data from different recorders

Data locator brackets

Use the **Data locator** to find your data. The **Locate** button appears at the bottom of the scale window, activate this to reveal an area below the **Time bar** underneath the **Graph window**.

The **Data locator** displays the location of data as grey bars, each bar representing data from a single recorder. The Data Locator shows all the data from a recorder(s), as a bar. The locator brackets represent the visible span of your graph.

Data can be found by moving the **Data locator brackets** along the X-axis until they capture the grey bars. Many recorders can be displayed on one graph. Drag the recorders from the Database slide-out pane onto the graph.

Using the left mouse button, click, hold and drag the data locator brackets left or right over the data. Right click to cancel a selection. The brackets can be resized to encompass small or large amounts of data. This data will then be displayed on the graph. Zoom in or out by left or right clicking on the time bar.

When the cursor is placed over the **Data locator brackets**, two arrows will appear. Use the right mouse button to move **Data locator brackets**, notice the brackets do not resize as with the left mouse button but remain the same.

The year, day, month and time will be displayed whilst the locator is being moved. For recorder specific help, select any item on the screen for enquiry and press F1 on the keyboard.

Printing graphs

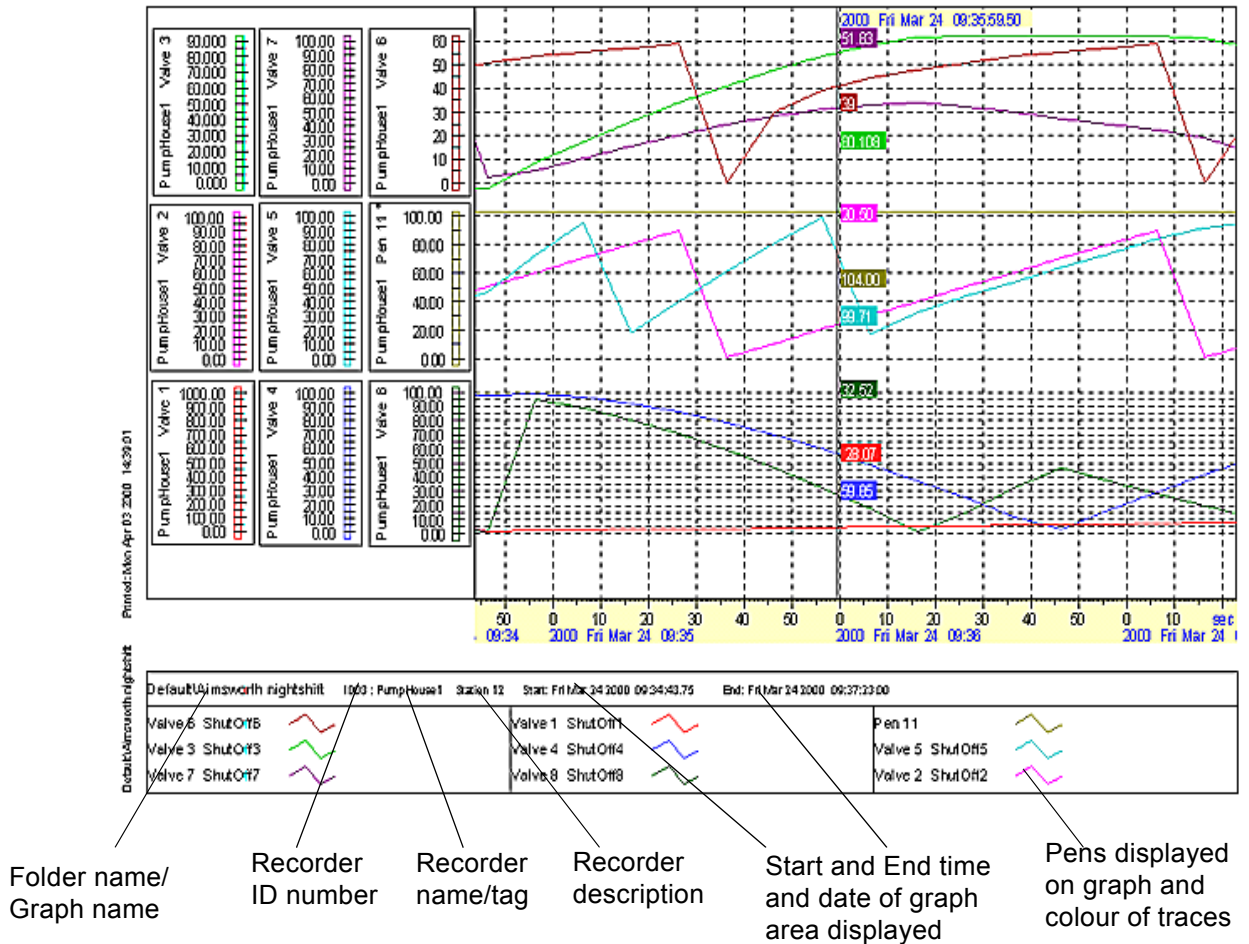
To **Print a graph** simply click on the print icon and select either standard print or legend print, or select print from the graph drop down menu running along the top of the screen. The latter gives you the option of print preview where the graphs can be viewed in both forms. The standard print will print the graph as displayed on the screen. Legend print adds an information box at the bottom of the graph identifying the graph name, recorder ID number, recorder name and recorder description.

Also displayed are all the pens used, showing each pen trace (in colour) with the pen tag/name and pen description. The legend print shows exact start and stop time and dates. The legend details are taken from information entered during the recorder, pen and graph set ups.

Both graphs will print vertical background lines according to the time span, and horizontal lines depicting the scale range. With different scale ranges, the horizontal lines displayed are from the scales nearest to the right hand edge of the scale area.

Use the **Arrange button** to ensure the scales down the right hand edge of the scale area are exactly in line. Go to Graph, Print preview to check all scale lines are visible, if some scale lines are missing the scales cannot be in line.

To change the print settings, have the graph open, select **Graph** from the drop down menu running along the top of the screen and select **Print Preferences**. Click in any area on the screen and press F1 on the keyboard to display the related help files.



Chapter 9: Glossary

Explanation of terms relating to the *TrendManager Pro V5 Suite*.

10baseT - Network cable and connections. Twisted pair cable, the most commonly used for Ethernet networks. The 10 means, 10 Mbps refers to the transmission speed.

100 mm key recorder - The recorder with a four way directional key on the keypad.

100 mm thumb recorder - The recorder with a thumbwheel on the keypad.

Address Resolution Protocol - Used for mapping an IP Address to a physical machine address that is recognised in a local network, such as an Ethernet Address.

ASCII - American Standard Code for Information Interchange. Represents characters as numbers for data transfer between computers.

Barcode - A machine readable, graphic image using pre-defined patterns of linear bars or polygonal elements to encode, typically all of ASCII character codes.

Baud rate - Number of signalling elements that occur each second (bps).

BOOTP - Bootstrap Protocol is an Internet Protocol which allows a diskless workstation to discover its own Internet Address, the IP address of a BOOTP server on the network, and a file to be loaded into memory to boot the machine. This enables a workstation to boot without requiring a hard or floppy drive.

Client connections - realtime connections to local or remote servers. eg. *TrendServer* software or an OPC client

Comms Server - This is the communications server which manages the communications status of a recorder via a serial port or Ethernet connection.

Database(s) - A collection of information organised in such a way that a computer program can quickly select desired pieces of data.

Database Server - data bases administered by the database server. The database server is accessible by other users on the network.

Data bits - Smallest unit of information on a machine.

Dedicated network - A computer network in which one or more computers are set aside (or dedicated) as servers.

Dedicated server - A computer used exclusively as a network server.

Default Gateway - A configuration parameter transmitted to each network device. Where an IP Address cannot be found in a local network, the default gateway sorts out getting traffic from one subnet to another.

DHCP - Dynamic Host Configuration Protocol. Used for assigning dynamic IP address to devices on a network. With dynamic IP addresses, a device can have a different IP address every time it connects to the network.

DNS - Domain Name System (or Service), an Internet service that translates Domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP Address. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address. For example, the domain name *www.honeywell.com/sensing* might translate to 195.26.34.186. The DNS system is, in fact, its own network. If one DNS server doesn't know how to translate a particular domain name, it asks another one, and so on, until the correct IP address is returned.

E-mail - Correspondence or data transmitted over computer telephone lines to a recipient via network lines or a service provider.

Ethernet - The worlds most popular network standard. A local area networking protocol for connection and interaction or communication between computers.

Ethertalk - What you call Ethernet when you use it on a Macintosh.

Fast Ethernet - An Ethernet standard which operates at 100Mbps rather than 10Mbps.

File server - A network computer containing disk drives that are available to network users. A computer library that stores a library of program and data files for a number of network users.

File Transfer Protocol (FTP) - A method of retrieving information from the internet. FTP are the rules that govern the transfer of data files within a computer or between computers.

FIXED - Fixed IP Resolution specified by user. Enter known IP address and Subnet Mask.

Handshaking - The protocol for identification and communication between two pieces of equipment.

Host - The home or controlling computer in a network of computers or printers.

Hub - A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets. See passive hub, intelligent hub and switching hub

Intelligent hub - Intelligent hubs include additional features that enables an administrator to monitor the traffic passing through the hub and to configure each port in the hub. Intelligent hubs are also called manageable hubs.

IP Address - This is an identification for communication. An IP Address is a 32-bit number that identifies each sender or receiver of information that is sent in packets across the Internet.

IP Resolution - A mechanism which maps the IP Address to an Ethernet address. This is also known as an Address Resolution Protocol, or ARP.

Local Area Network (LAN) - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building). Usually, the server has applications and data storage that are shared in common by multiple computer users. A local area network may serve as few as two or three users (for example, in a home network) or many as thousands of users

Local Database - Referred to in this manual this means a database held on your own PC.

MODBUS - Modbus™ is an industry standard protocol used in many SCADA packages for network control. The recorders can be inserted into existing networks using Modbus or linked directly to a controller over an RS485 link. Modbus TCP/IP is available through the Ethernet interface.

MODBUS X - Modbus X differs from the standard Modbus only by the 4 byte floating point order being reversed for application compatibility.

Network - Two or more computers connected together by cable so that they can exchange information and resources. A network may be made up of computers, printers, scanners, or other devices.

Network drive - A drive that resides somewhere in the network rather than on your own computer.

Network interface card (NIC) - An adaptor card that lets the computer attach to a network cable.

Network server - A computer that stores and manages programmes, data and peripherals such as output devices for other computers and workstations connected through the network. Also called a file server.

OPC client - OLE Process Control. A software application that can be used to interface realtime data via the comms server.

Packets - Data is sent over a network in manageable chunks called packets or frames. The size and make-up of a packet is determined by the protocol used.

Parity - This ensures data is transmitted accurately and transfers correctly. The parity bit is added to every data unit (typically 7 or 8 bits) that are transmitted. The parity is set to either odd or even. Both the transmitting and receiving device must be set up the same.

Passive hub - A passive hub serves simply as a conduit for the data, enabling it to go from one device (or segment) to another.

Peer-to-peer network - A network in which any computer can be a server. A scheme in which networks computers share resources; each work station may either be client or server. See also Dedicated network.

PPP - Point to Point Protocol. This is an Internet protocol (IP) which packages the computers TCP/IP packets and forwards them to the Server. From the Server they can actually be put on the Internet. PPP has error detection and is preferred over SLIP.

Profibus - Profibus allows communication between devices of different manufacturers without any special interface adjustment. Profibus can be used for both high-speed time critical applications and complex communication tasks.

Protocol - The rules of the network game, governing the transfer of data between a computer and peripherals. Protocols define standardisation formats for data packets, techniques for detecting and correcting errors.

Realtime data - Logging or graphing realtime data means that the software and the recorder have been synchronised in time to communicate the transfer of actual current 'happening now' data.

Remote Database/Server - Referred to in this manual as a database or server that is not directly connected to your workstation or PC (not on a local network).

RS232 - This protocol is useful for point-to-point communications at low speeds. For example, port COM1 in a PC can be used for a mouse, port COM2 for a modem etc. This is an example of point-to-point communication: one port, one device. RS232 was designed for communication of local devices, and supports one transmitter and one receiver.

RS485 - RS485 is used as a multiport communications: more devices may be connected to a single signal cable e.g. Ethernet networks, which use coaxial cable.

Server - a computer or device on a network that manages network resources. For example, a File Server is a computer and storage device dedicated to storing files. A Network Server, is a computer that manages network traffic and a Database Server is a computer that processes database queries. Servers are often dedicated, meaning that they perform no other tasks besides their server tasks.

SLIP - Serial Line Internet Protocol for communication between two machines previously configured for comms with each other. PPP is preferred.

Stopbits - Used to signify the end of a character string. Used for setting up constraints for Ethernet communications.

Subnet Mask - A single IP network can be divided into many subnets by using some of the MS bits of the host address portion of the IP address as a subnet. A mask is simply a screen of numbers that tells you which number to look at underneath. Using a mask saves the router having to handle the entire 32 bit address; it can simply look at the bits selected by the mask.

Switching hub - actually reads the destination address of each packet and then forwards the packet to the correct port.

Transmission Control Protocol/Internet Protocol (TCP/IP) - The standard procedure for regulating transmission on the Internet.

Trendbus RS485 - Custom protocol for connection and interaction or communications between computers and other peripherals, providing high levels of functionality and security.

WAP - Wireless Application Protocol. Secure specification allows user access to information instantly via hand held devices such as mobile phones with displays for Internet access.

Windows NT Server - Microsoft's premier server operating system ideal for running dedicated servers in small or large networks.

Windows 2000 - A multipurpose network operating system for running server applications and building internet capabilities as well as sharing files and printers etc.

Appendix A - Maths Expressions

A maths expression is made up of a number of terms. A term is the smallest valid component in a maths expression and can be a variable, operator or function. Certain operators and functions have the same effect in a maths expression - for example, $\$$ or $SQRT$ will both perform the square root of an operand.

An operand may be a constant (i.e. a fixed number) or a **variable**. The variables that can be used are described below.

In the following examples P1 (Pen 1) equals the result of the maths expression shown in the shaded area. A pen number (P1) will be automatically entered when a pen is selected.

•**An** - The letter 'A' followed by a number causes the reading taken from an analogue input (denoted by the number) to be inserted in the maths expression. In this example, the readings from Analogue Input 1 are being displayed on Pen 1.

P1= A1

•**In** - The letter 'I' followed by a number causes the reading taken from a digital input (denoted by the number) to be inserted in the maths expression. In this example, the result of digital input 1 multiplied by digital input 2 is displayed on Pen 9. As digital inputs are read as either 1 or 0, the result of this maths expression will effectively be an AND function (i.e. digital inputs 1 and 2 must both be 1 for the value displayed on Pen 9 to be 1 - see ["Boolean Expressions" on page 78](#)).

P1= I1*I2

•**On** - The letter 'O' followed by a number causes the state of a Relay output (denoted by the number) to be inserted in the maths expression. A Relay output is read as 1 when active and 0 when inactive.

P1= O1

•**Operators*** - can be either unary or binary. A unary operator requires one operand after it to make a valid expression, whereas a binary operator requires an operand on either side. For example # is a unary operator, as in $\#2$ (2 squared), whereas * is a binary operator, as in $2*3$ (2 multiplied by 3). *Not available on the *eZtrend V5*.

•A new feature on the *Minitrend V5* and the *Multitrend Plus V5* is MU (Memory use) DU, (Disk use) and PU* (PC card use) gives a percentage reading of disk or memory space used. *Not available on the *eZtrend V5*.

P1= MU

NB. When entering the MU and DU feature using *Trend Manager Pro V5 Suite*, ensure the Complex Variables box is ticked.

The available functions and operators for maths expressions are described below. Where a function and operator have the same effect they are listed together. A **U** after the operator denotes a unary operator and a **B** denotes a binary operator.

NB. Maths functions highlighted with a * in the Example column, are not available on the *eZtrend V5*.

FUNCTION	EXPRESSION	EXAMPLE	DISPLAY
+	Add Operator + (B)	Analogue Input 1 added to Analogue Input 4 displayed on Pen 1	P1 = A1+A4
-	Subtract. Operator - (B)	Analogue Input 1 subtracted from Analogue 2 displayed on Pen 1	P1 = A2-A1
-	Negate. Operator - (U)	*The sign of the value Analogue Input 1 is reversed. A reading of 6 would be displayed as -6 and vice versa	P1 = -A1
*	Multiply. Operator * (B)	The value of Analogue Input 2 multiplied by two	P1 = A2*2
/	Divide. Operator: / (B)	Analogue Input 1 divided by Analogue Input 3	P1 = A1/A3
SQRT	Square Root. Function: SQRT Operator: \$(U)	*Pen 1 displaying the square root of Input 3 added to Input 4	P1 = SQRT[A3+A4] P1 = \$A3+A4
SQ	Square. Function SQ Operator: # (U)	*The value of Input 3 squared and displayed on Pen 1	P1 = SQ[A3] P1 = #A3
ROUND	Round. Function ROUND	*The value of Analogue Input 2 divided by four and rounded to the nearest whole number	P1 = ROUND[A2/4]
RECIPROCAL	Reciprocal. Operator! (U)	*The reciprocal of the value of Analogue Input 2 is displayed on Pen 1. (An alternative way of writing this expression would be 1 / A2).	P1 = ! A2

FUNCTION	EXPRESSION	EXAMPLE	DISPLAY
ABS	Absolute. Function ABS Operator: & (U)	The result of Input 4 subtracted from Input 1 is always considered as positive. If A1 = 2, and A4 = 3.5, the value displayed on Pen 1 would be 1.5 not -1.5.	P1 = ABS[A1-A4] P1 = & A1-A4
T	Assigns the Totalised value of a Pen	Pen 1 displays the Total of Pen 2 divided by 10 NB: Do not omit the divider (10), even if it is 1	P1 = T[2,10]
LOG	Logarithm to base 10. Function: LOG Operator: @ (U)	*Logarithmic value (LOG10) of Input 1 displayed on Pen 1.	P1 = LOG[A1] P1 = @A1
LN	Natural logarithm. Function: LN	*Natural logarithmic value (loge) of Input 2 displayed on Pen 1.	P1 = LN[A2]
LO	Low value. Function: LO	Pen 1 displays whichever is the lowest value out of Input 1 and Input 3. Note the inputs being compared are separated by a comma.	P1 = LO[A1,A3]
HI	High value. Function: HI	Pen 1 displays the highest value out of Input 1 and Input 3.	P1 = HI[A1,A3]
ROOT	Root. Operator: ~ (B)	*The third root value of Input 1 displayed on Pen 1.	P1 = A1~ 3
POWER	Power. Operator: ^ (B)	*The value of Input 2 to the power of 3 (or cubed) displayed on Pen 1.	P1 = A2^ 3
MODULUS	Modulus Operator: % (B)	The value of Input 2 (A2) is divided by 20 and the remainder ONLY is displayed on Pen 1. The signal will be within 0-19.	P1 = A2%20
OVER	Over	If the analogue input 'A1' is greater than '10' then P1 will return the value of A1. Returns '0' if less than '10'.	P1 = OVER[A1,10]
UNDER	Under	If the analogue input 'A1' is less than '10' P1 will return the value of A1. Returns '0' if greater than '10'.	P1 = UNDER[A1,10]

FUNCTION	EXPRESSION	EXAMPLE	DISPLAY
INSIDE	Inside range	*P1 will equal 1 when 'x' stays within the ranges of 'y' and 'z'. P1 will return '0' if 'x' is not within the ranges of 'y' and 'z'.	P1 = INSIDE[x,y,z]
OUTSIDE	Outside range	*P1 will equal 1 when 'x' is outside the ranges of 'y' and 'z'. P1 will return '0' if 'x' is not outside the ranges of 'y' and 'z'.	P1 = OUTSIDE[x,y,z]
SIN	Sine	*The value of P1 equals the Sin of A1 A1 is in radians (2pi radians in every 360°C)	P1 = SIN[A1]
COS	Cosine	*The value of P1 equals the cosine of A1 A1 is in radians (2pi radians in every 360°C)	P1 = COS[A1]
TAN	Tangent	*The value of P1 equals the tangent of A1 A1 is in radians (2pi radians in every 360°C)	P1 = TAN[A1]
F2C	F2C	*Converts Fahrenheit to Celsius	P1 = F2C[P2]
C2F	C2F	*Converts Celsius to Fahrenheit	P1 = C2F[P2]
A	Indexed analogue	P1 is equal to the indexed analogue input 1+I1 (If I1 = 1, P1 = A2) (If I1 = 0, P1 = A1)	P1 = A[1+I1]
I	Indexed digital input	P1 is equal to the indexed digital input of 1 + O1 (If O1 is 1, P1 = I2)	P1 = I[1+O1]
O	Indexed relay output	P1 is equal to the indexed relay output of 1-A1 (If A1 = 0, P1 = O1)	P1 = O[1-A1]
EVAL	Evaluate	*Returns 0 if x = 0, otherwise returns 1	P1 = EVAL[x]
RAV	Rolling Average. Function: R	*P1 displays the rolling average of: x = analogue input eg. A1 y = number of samples, Max 500 z = sample interval (ms)	P1 = RAV[x,y,z]

FUNCTION	EXPRESSION	EXAMPLE	DISPLAY
DELAY	Delayed value	*P1 equals the 'Delay' of input A1, number of samples (10), every second (1000 ms)	P1 = DELAY[A1,10,1000]
Exp	Exponential	*Calculates the value of the exponential. (P1 = 7.389056)	P1 = EXP [2]
FL	Floor	*Rounds down to the nearest whole number	P1 = FL[x]
CE	Ceiling	*Rounds up to the nearest whole number	P1 = CE[x]
CJC	Cold Junction Compensator	P1 displays the value of the CJC 'x' is the board number from 1 to 4	P1 = CJC[x]
CA	Alarm counter	*Where 'x' is the Alarm number, P1 will return the alarm count value	P1 = CAx
CD	Digital counter	*Where 'x' is the Digital input number, P1 will return the Digital count value	P1 = CDx
CE	Event counter	*Where 'x' is the Event number, P1 will return the Event count value	P1 = CEx
CU	User counter	*Where 'x' is the User counter number, P1 will return the User count value	P1 = CUx
ASIN	Inverse of SIN	*The value of P1 equals the inverse SIN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ASIN[A1]
ACOS	Inverse of COS	*The value of P1 equals the inverse COS of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ACOS[A1]
ATAN	Inverse of TAN	*The value of P1 equals the inverse TAN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ATAN[A1]
SINH	Hyperbolic SIN of 'x'	*The value of P1 equals the hyperbolic SIN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = SINH[A1]
COSH	Hyperbolic COS of 'x'	*The value of P1 equals the hyperbolic COS of A1. A1 is in radians (2pi radians in every 360°C)	P1 = COSH[A1]

FUNCTION	EXPRESSION	EXAMPLE	DISPLAY
TANH	Hyperbolic TAN of 'x'	*The value of P1 equals the hyperbolic TAN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = TANH[A1]
ASINH	Inverse hyperbolic SIN of 'x'	*The value of P1 equals the inverse hyperbolic SIN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ASINH[A1]
ACOSH	Inverse hyperbolic COS of 'x'	*The value of P1 equals the inverse hyperbolic COS of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ACOSH[A1]
ATANH	Inverse hyperbolic TAN of 'x'	*The value of P1 equals the inverse hyperbolic TAN of A1. A1 is in radians (2pi radians in every 360°C)	P1 = ATANH[A1]
AL	Alarm Status	P1 displays the Alarm status for AL1. 64 alarms available, AL1 to AL64 Returns '1' for an active alarm and '0' for an inactive alarm	P1 = AL1

NB. Maths functions highlighted with a * in the Examples column, are not available on the *eZtrend V5*.

Constants

A **Constant** can be added to the end of a Maths equation. These are the constants available.

Constant	Value	Description
PI	3.14159	The ratio of the circumference of a circle to its diameter
C	2.99792e+008	Speed of light
Vmol	22.4138	The molar volume, in units ml/mole
g	9.80665	Gravity
Planck	6.62608e-034	Equal to the ratio of the energy E of a quantum to energy to its frequency
Boltzmann	1.38066e-023	Average energy of a molecule to its absolute temperature
Charge e	1.60218e-019	Elementary charge (electron, proton)
Avogadro	6.02214e+023	Number of particles per mole of particles

Boolean Expressions

Boolean expressions can be performed using Relay output (O) and Digital input (I) variables. At a basic level **AND** and **OR** functions can be performed by using the * and + operators respectively between the above variables. More significantly, these variables and operators can be used to enable or disable certain segments of a maths expression, as illustrated in the following example.

Example:- The temperatures of two adjacent kilns are being monitored. Kiln 1 is being monitored on Analogue Input 1 of a recorder, and Kiln 2 on Analogue Input 2. It is noticeable that when Kiln 1 reaches a temperature above 750 °C, the Kiln 2 temperature increases by 2% of the Kiln 1 temperature. How can the recorder be set up so that this 2% increase is ignored?

1. A high alarm on Analogue Input 1 is set so that when the temperature reaches above 750 °C Relay output 1 is activated.
2. Set the maths expression for Analogue Input 2 as $P2 = A2 - ((A1/50) * O1)$. This means that when the temperature of Kiln 1 is below 750°C, $O1 = 0$ so the above expression will be $P2 = A2$.

When the temperature is above 750 °C, $O1 = 1$ so the term $A1/50$ (which is 2% of the value of $A1$) will be subtracted from the value of $A2$. This will give the temperature of Kiln 2 as it would be without the effect of Kiln 1.

Calculations are performed in the order in which they are written from left to right. So for the expression **$P1 = A1 + A2/2 * A3$** , the sequence of calculations would run as follows:-

$A1 + A2$
then $r / 2$
then $r * A3$

where 'r' is the result of the calculation performed on the preceding line. Use round brackets to change the order of precedence - e.g. $P1 = A1 + (A2/2) * A3$ would give a different result from the above example as $A2$ is divided by 2 **before** it is added to $A1$.

Spaces are not recognised in maths expressions and the expression can be written anywhere within the 250 character text field.

$P1 = \text{ROUND}[(A3)]$

More than one set of brackets can be used in a maths expression. For example, if you wanted the value of the square root of Analogue Input 3 to be rounded to the nearest whole number the expression would be written in one of three ways as shown opposite.

$P1 = \#(\text{SQRT}[A3])$

In the first and third example the round brackets surrounding **$A3$** can be omitted - they are included to make the expression easier to understand.

$P1 = \#(A3)$

Maths and Fail Safe

When using output relays in a maths expression be aware the maths is reporting the literal state of the relay.

If Pen 1 ($P1$) equals output channel 4 ($O4$) and fail safe is On with no alarm triggered, the relay will be energised and $P1$ will return 1.

$P1 = O4$

Appendix B - Fuzzy Logging

What is Fuzzy Logging?

Fuzzy Logging is a real time **Data Compression** technique, is an alternative to the more standard methods of recording data.

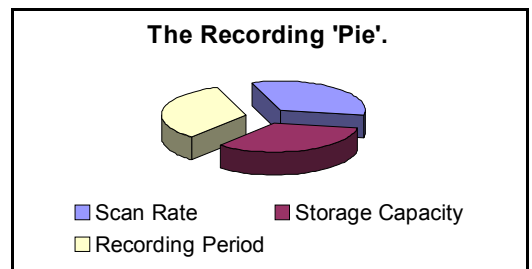
Paperless Recorders are primarily used for exception recording. They spend most of their life trending and recording straight lines. Fuzzy Logging has been developed to improve the efficiency of data storage, and is particularly effective in exception recording examples where normal operation consists of generally static inputs.

Fuzzy Logging looks for straight lines in the data stream, in real time, whether they are horizontal, climbing or descending. A straight line made up of say 10 points can be equally well represented by 2 points, one at either end, the other 8 points are redundant. Fuzzy logging works by creating straight lines in the data and discarding redundant points.

What's it for?

..... To help the user in the trade off between **Scan Rate**, **Disk capacity** and **Recording Time**, after all the 'Pie' is only so big.

Fuzzy Logging has been developed to help maximise all three sections, in effect increasing the size of the 'Pie'.



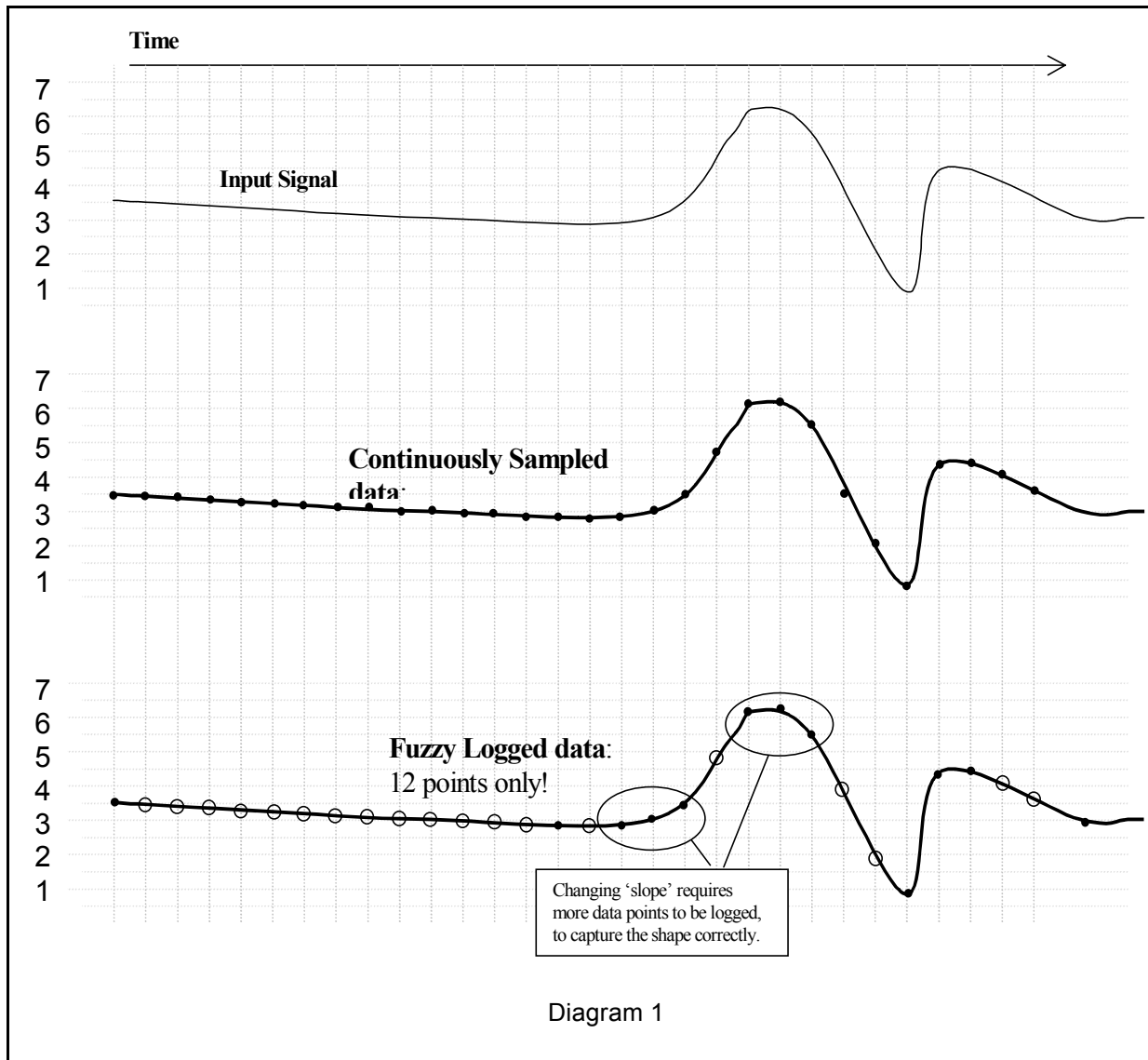
The result is a technique that delivers a host of real world benefits over the more traditional recording methods.

1. Disks take longer to fill – changed less frequently, less site visits.
2. Faster scan rates can be used for any given disk size – giving greater resolution on the process.
3. Recording time can be extended.
4. Less hard disk memory required for archiving on the PC.
5. Quicker graphing of data.
6. Smaller data files for remote collection.

OK. How does it work?

Fuzzy Logging does not log data points that form part of a straight line.

The technique is best illustrated by the diagram below:



Points marked: ○ are **NOT** logged, as they lie on an 'imaginary' straight line between points marked: ●

The graph of the Fuzzy Logged data, looks identical to the graph of the sampled data, but has taken **less than half the points** to build it.

Sounds Great! But what about ‘Spikes’ on my trend line. Won’t it miss them?

NO, you will not miss any ‘Spikes’, ‘Glitches’ or ‘Transients’ – these are what you need to see!

As Fuzzy Logging is an adaptive technique, it will log as fast as it needs to in order to capture everything.

Although not all points are logged, the base ‘Scan Rate’ of the input is the same as if you were using a standard logging technique.

OK, but what about slowly drifting inputs?

Again – **No Problem**. The algorithm is processed in ‘Real Time’, i.e. as the reading is taken. As it already knows the previous logged readings it can calculate where the next point should be (assuming it’s on a straight line) – if the measured value does not equal the predicted value, the point is logged as it no longer forms part of the straight line.

Fuzzy Logging, looks for straight lines – **at any angle**. Not just on the horizontal.

I’m convinced. Do you have any examples?

Example 1.) Flow & Pressure Measurement of Mains Water Pressure

A recorder was installed, to monitor the flow of a mains water supply. At peak demand the mains pressure had been subject to sharp drops in pressure and flow rate, and it was necessary to find the cause of the problem.

- The recorder had to have a fast scan rate, in order to capture the ‘glitches’.
- The recording period would be over many days if not weeks, so storage capacity was at a premium.

A fast scan rate using the standard sampling method would result in a disk life of about a day, which was not acceptable.

As this application consists of long periods of little activity (relatively constant flow rate), and short periods of high activity (rapidly changing flow rate), it is an ideally suited to Fuzzy Logging.

During the hours of stable flow where the flow rate remained more or less constant, the Fuzzy Logging technique would give compression ratios up to 100 times. However, as soon as a glitch appeared the fast sampling rate was able to capture and store all the points.

Example 2.) Cold Storage Temperature Measurement

A recorder was required to help track random and rapid temperature changes within the cold storage rooms. Conventional sample recording had shown that temperature variations were present, but was not of high enough resolution to pin point the cause.

Again as in example 1), the measured inputs would show long periods of stable constant readings, interspersed with small sharp increases in temperature. In order to track the cause of these variations, it was necessary to maximise the time resolution of the data. This application was ideally suited to the Fuzzy Logging data storage technique, as the periods of inactivity would result in compression rates of over 50 times.

Example 3.) Logged Data Example

The diagram below is a sample of actual logged data in both the Fuzzy Logging method (top) and Sample Logging method (bottom), derived from the same analogue input.

It provides an excellent illustration of how less data points can be used to construct an identical trace.

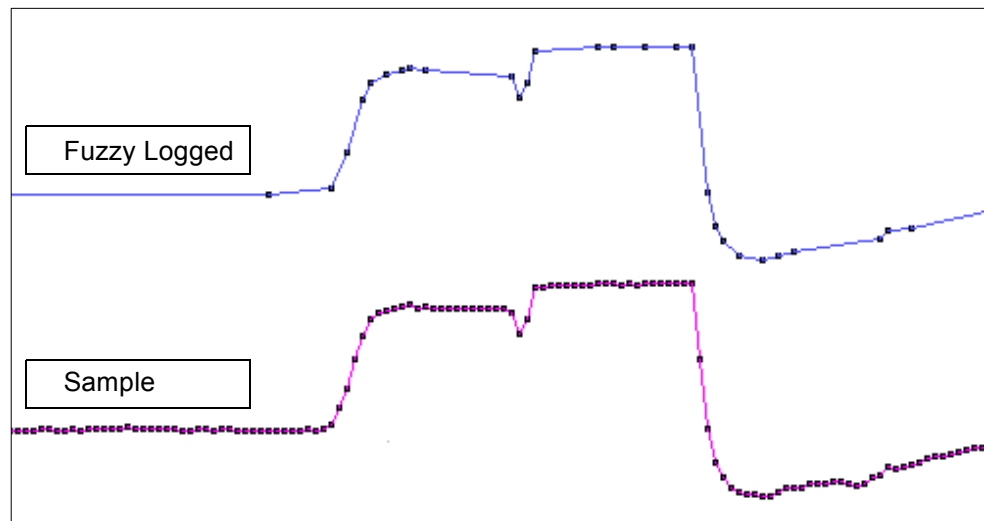


Diagram 2.

NB. This data extract was taken from a 56 hour temperature run, which resulted in approximately 1 Mbyte of sample data, and approximately 40 Kbyte of Fuzzy Logged data.

A compression ratio of 25 times!

Anything else it can do?

Yes! Fuzzy Logging can be used as a '**One Hit**' recording button.

In applications where the measured process is new or the ideal scan rate is unknown Fuzzy Logging is ideal, as it adapts the log rate to the input signal, and can therefore find the optimum logging rate for you.

Appendix C - Events

Events Listings; Cause and Effect

The following is a list of all conditions and operations that are logged as Events. It provides a description of the Event followed by a description of the Cause, in Table 1 and the Effect in Table 2

*Not available on the *eZtrend V5*.

Table 1: Cause

Method	Description
Into Alarm	When alarm state is entered
Out Alarm	When alarm state is exited
Counter*	When a counter reaches a specified value
Logging*	When logging starts, stops
Change Set up*	When a set up is changed
Disk/Card % Full	When a disk or PC card is X% full. (X = user defined entry)
Disk/Card Out*	When a disk or PC card is removed from system
Totaliser Start	When totaliser is started
Totaliser Stop	When totaliser is stopped or paused
Totaliser Reset	When a totaliser is reset
Digital Inputs (high)	A digital input has been applied
Digital Inputs (low)	A digital input has been removed
Relay Outputs (high)*	A relay output has been closed
Relay Outputs (low)*	A relay output has been opened
Thermocouple O/C*	Check if thermocouple has reported as open circuit
Screen Change*	When a swap to another screen is generated
Manual Mark On Chart*	When a manual mark on chart is received
Scheduled*	Triggers an event at a specific time
Start-up*	Trigger at recorder start up
Data Flushed*	Logging/Event data has been successfully flushed to disk
ASCII serial data*	When serial data is received through RS232 or RS485
Web Activate	Triggered manually from web page

*Not available on the *eZtrend V5*.

Table 2: Effect

Method	Description
Mark On Chart	Cause a mark on chart
Logging	Control logging starts/stops or start logging and discard current data in memory
Start Totaliser	Start totaliser
Stop Totaliser	Stop totaliser
Reset Totaliser	Reset totaliser back to min value or 0
Screen Change*	Automatically swap to another screen
Set Relay	Close relay output(s)
Clear Relay	Open relay output(s)
Counter Control*	Add to or Reset a counter
Event	Trigger another event(s)
Chart Control*	Chart control method: Pause, Resume or Toggle
E-mail	E-mail a message to a user
Flush Data*	Flush all logging data to disk or PC card
Reset Max/Mins*	Resets visible max/mins

Appendix D - Ethernet & E-mail

Ethernet

Ethernet is a local area network (LAN) technology that transmits information between computers and other devices, at speeds of 10 to 100 million bits per second (Mbps). Each Ethernet equipped device operates independently of all other devices on the network.

All devices attached to an Ethernet are connected to a shared signalling system. Ethernet signals are transmitted serially, one bit at a time, over the shared signal channel attached to each device.

It is up to the high-level protocol that is sending data over the network to make sure that the data is correctly received at the destination device.

Devices attached to an Ethernet can send application data to one another using high-level protocol software, such as TCP/IP protocol suite.

High-level protocols have their own system addresses, such as the 32-bit addresses used in the current version of IP. The high-level IP-based networking software in a device is aware of its own 32-bit IP address and can read the 48-bit Ethernet address of its own network interface, but it doesn't know the Ethernet addresses of the other devices on the network.

To discover the Ethernet addresses of other IP-based devices on the network another high-level protocol is used. For TCP/IP, this is done using a protocol called Address Resolution Protocol (ARP).

Example:

Device X has an IP address of 195.23.37.1 and sends data over the Ethernet channel to another IP-based device, Device Y with IP address 195.23.37.2. Device X sends the packets of information containing an ARP request. The ARP request is asking the device with the IP address of 195.23.37.2 to identify the address of the Ethernet Interface.

Only Device Y with the IP address of 195.23.37.2 will respond, sending a packet with the Ethernet address of device Y back to device X. Now device X and Y have each others Ethernet addresses to which data can be sent.

E-mail

General operation of the e-mail system

The recorder sends messages for distribution by an e-mail server. The e-mail server is located by its IP address as set-up in the communications set-up options. When the recorder sends an e-mail message, it locates the e-mail server and uses SMTP (Simple Message Transfer Protocol) to send the message to the e-mail server. SMTP allows the recorder to send messages to an e-mail server without having its own e-mail address; because of this the e-mail server will not be able to send any reply back to the recorder.

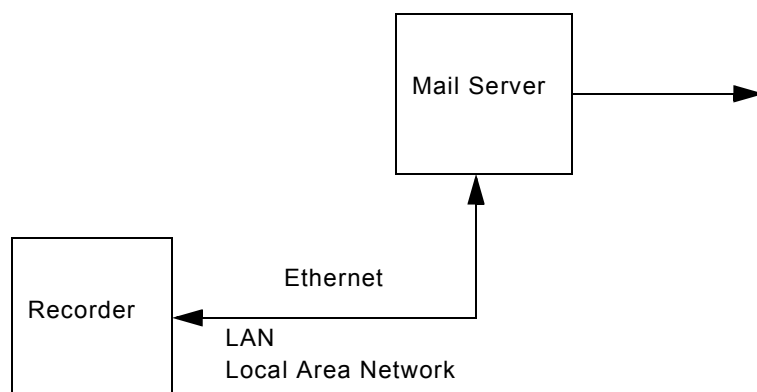
When setting-up the e-mail address list, it is important to include the e-mail administrator address. The Administrator e-mail address is the e-mail address to where the e-mail server will respond in the event of any problems with the delivery of e-mail messages. The Administrator will also appear to be the source of any e-mail messages sent by the recorder. Most e-mail systems require a 'Reply To' address as part of an e-mail message, since the recorder does not have its own e-mail address; it uses the e-mail administrator as the 'Reply To' address.

Any e-mail message will consist of a delivery list (recipients), a subject, and an optional message body. The message body may be omitted for very short messages, or where the message is to be sent to a paging system.

The e-mail subject may be either one of the existing event markers, or one of the two e-mail subjects. The e-mail message body may be either one of the existing event markers, or one of the two e-mail message blocks. Event markers are restricted to 80 characters each. The two e-mail message blocks are restricted to just over 1000 characters each. Both the message subject and body may contain embedded marker tags as used in the event markers.

When the recorder sends an e-mail message that includes a message body, the recorder name, recorder number and the time/date will be appended to the end of the message body text. This is to allow easy identification of when the message was sent, and by which recorder.

Any e-mail message is sent as an action within the recorder events system, so anything that can be configured to act as an event cause, may be configured to send an e-mail message. Any e-mail message may be sent to up-to sixteen of the recipients. If the e-mail server supports named groups of e-mail addresses, an e-mail message may be sent to a combination of e-mail addresses and e-mail group.



Appendix F - Screen Designer

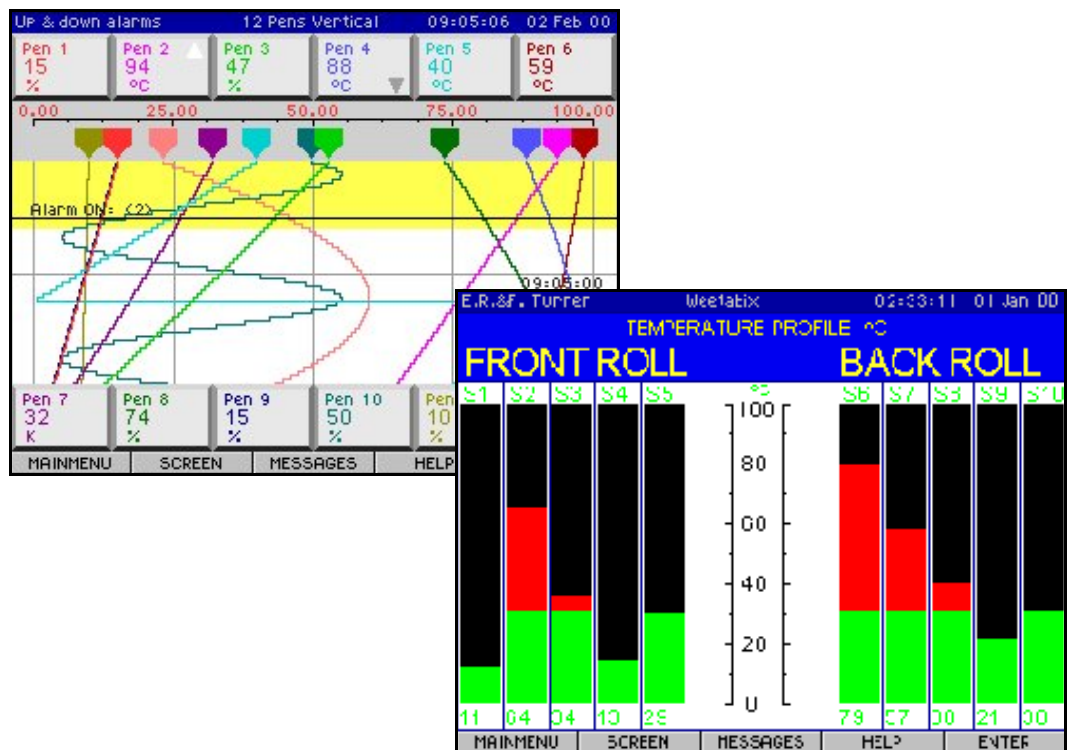
Welcome to *Screen Designer* for *Minitrend V5* and *Multitrend Plus V5*. A complete software tool with total design flexibility to produce the ultimate in customised display layouts.

NB. Not available on the *eZtrend V5*

Screen Designer enables the customer to design unique display for transfer on to the recorder screen. Screen layouts can be created using any combination of indicators such as trending Charts, Digital Panel Meters (DPM), Bargraphs, Bit-maps, Digital pictures and Plant diagrams. Flexibility allows each type of indicator to have elements of its appearance changed to create an individual presentation.

The *Screen Designer* software design package is compatible with both *Minitrend V5* and *Multitrend Plus V5* so layouts can be transferred on to single or multiple recorders giving continuity and standardisation of process data.

This software can be used in conjunction with the *TrendManager Pro V5 Suite*.



Why do you need Screen Designer?

Screen Designer has been developed to meet the ever increasing demand for instant information which is customised for efficient operator interpretation. This software tool enables the user to quickly develop totally customised screens displaying easy to read data.

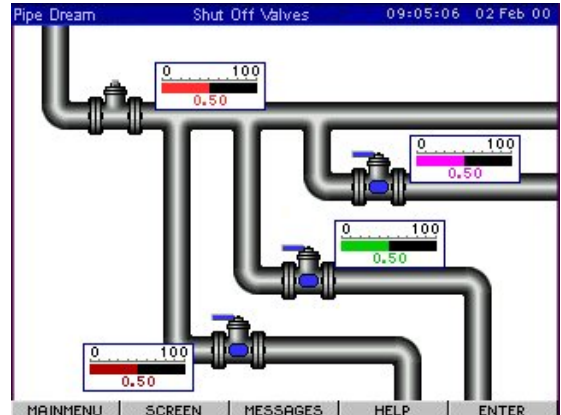
The recorders screen can become a complex display of information, monitoring readings and acquiring data. Use *Screen Designer* to display data for clear and precise presentation of process data.

How does it work?

Graphical devices, called **Widgets**, are positioned on to a blank template representing the recorders screen. The widgets are made up from individual objects which can be modified to suit the users requirements. Each widget displays data in different formats e.g. Chart, Bargraph, or Digital readouts. These can be used in conjunction with Bitmaps to create an exclusive screen design. A widget interprets the different ways to display data activity on the recorders screen.

Contact us for more details on the new *Screen Designer* package and updating your recorder with custom screen and mimic capabilities.

Examples of screen designs on a Minitrend V5.



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Please take a moment to complete this questionnaire

1 Reputation

How would you rate the reputation of **Honeywell**

Tick as appropriate

- A very reputable, successful company ☐
- A reputable company ☐
- A disreputable company ☐
- No views either way ☐

2 Service

How do you rate or perceive the following service levels provided by our sales staff?

Tick as appropriate Excellent Good Fair

- Response speed ☐ ☐ ☐
- Quality of response ☐ ☐ ☐
- Follow up response ☐ ☐ ☐
- Overall level of service ☐ ☐ ☐

How do you rate or perceive the following service levels provided by our Technical Support Service?

Tick as appropriate Excellent Good Fair

- Response speed ☐ ☐ ☐
- Quality of response ☐ ☐ ☐
- Follow up response ☐ ☐ ☐
- Overall level of service ☐ ☐ ☐

How could our service be improved upon

.....

.....

How many times do you receive a visit from one of our Sales representatives? Visits every:

1-3 months ☐ 3-6 months ☐ 6-12 months ☐

How does that compare to our competitors?

More ☐ Less ☐ The same ☐

Score on a level of 1-10, with 10 being the best

- Quality of manuals / sales literature ☐
- Administration / documentation and letters ☐
- Technical expertise of our sales staff ☐
- Sales staff ability to give informed advice ☐
- The quality of the **Honeywell** sales team. ☐
- Pricing ☐
- Honeywell** understanding of your industry. ☐

3 Products

How do you perceive our range of products?

Tick as appropriate

- ☐ Products offered are **better** than those of competitors
- ☐ Products offered are **worse** than those of competitors
- ☐ Products offered are the **same** as those of competitors

Any other comments

.....

.....

.....

Are there any products that we do not provide that you would like us to provide - or any we could improve on?

.....

.....

.....

Improvements to existing products.....

.....

.....

4 General

If you are an existing or new customer, what made you choose **Honeywell**?

- ☐ Only on price
- ☐ Price plus a combination of factors
- ☐ Prefer to deal with a reputable company
- ☐ **Honeywell** offers more than the competition in terms of 'added value' over and above the product itself

Thank you for completing this questionnaire.

Please fill out your name and address below.

Photo copy this form and Fax to us on

+1 (215) 641 3400

Name

Company name

Address

.....

County..... **Postcode**.....

Tel..... **Fax**.....

Company business

.....

Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective material and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during that period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and **is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

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